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GERAINT THOMAS 'THE TOUR IS PRETTY SIMPLE – YOU SMASH IT, RECOVER, THEN DO IT ALL AGAIN'

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ISSUE 009

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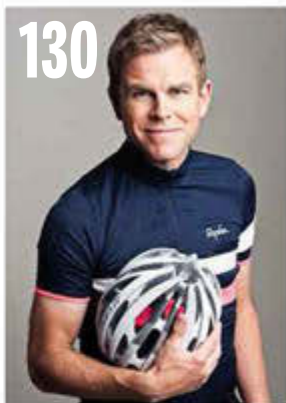
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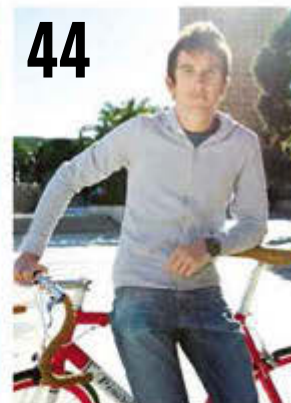
Matt Barbet

'The Grand Départ showed off the historic county of Yorkshire's beautiful true colours'



What supps?

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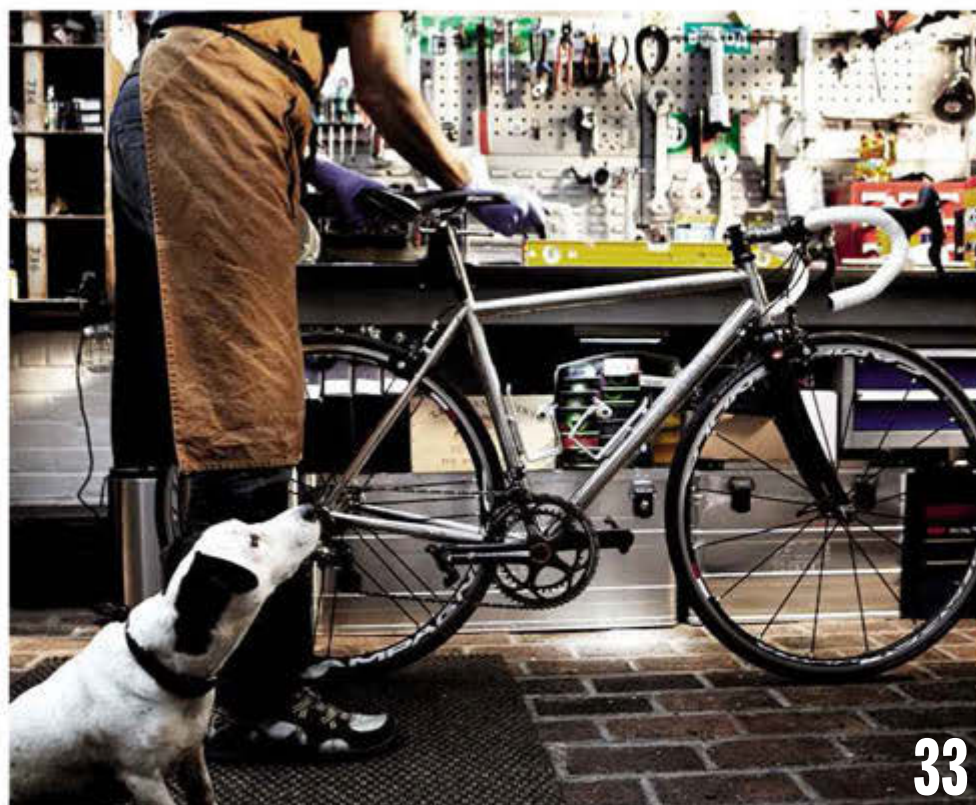
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ReviewsEtc

Welcome to BikesEtc's reviews section. Whether you're after a bike, kit or clothing, we've got the latest gear through its paces to help you find what's right for you.

PHOTOGRAPHY: HENRY CARTER, JONNELLE SCHENK



THE AWARDS



JULY 2015 BikesEtc 15

HERE'S HOW OUR REVIEWS WORK...

ReviewsEtc is your essential buyer's guide to the best road cycling products. Every month, we feature in-depth group tests of the latest bikes, clothing, components and accessories to ensure you're as well informed as possible when it comes to spending your cash. We know that making the right decision is equally important whether you're spending £10 on a pair of socks or several thousand on a new bike.

For each group test, we use an extensive set of criteria, including performance, ease of use, build quality and value for money. We take our time to come up with the best way to test every product, whether that means building a special rig to test pump pressure or standing out in a pitch-black country lane in the middle of the night to measure lighting beam patterns. Note that all weights and measurements are

taken from our own testing procedures, not from the details supplied by the manufacturer.

We then take the products out for road testing, riding, using and wearing them as thoroughly as possible on commutes, training rides and even in races, to see how well made and durable they are and how well they cope with real-world cycling situations.

Outside of our main reviews section, we also give scores for many of the other bikes and products we feature in the magazine. Although our First Ride bike tests are not as in-depth as our main reviews, we aim to give you an at-a-glance overview of the key features, characteristics and qualities of the bike based on our first impressions. Many of these bikes will then be subjected to full long-term testing to appear in group test reviews in a future issue.

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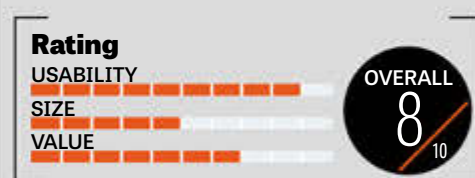
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THE RATINGS



For each group test, we score the products based on a comprehensive range of criteria. There isn't space to give a full breakdown of the scoring, but we highlight the most important and relevant features so you can see in which areas each product performs especially well, and where its weak spots lie.

Giving extra weight to the most important features, we add up the ratings for each product and convert them into an overall score out of 10. Note that while two products may achieve the same overall score, they may be very different in key areas – see individual ratings for further detail.

THE AWARDS



Best Value

Winners of this award may not have the highest overall score in their group test, and may not be the cheapest, but they will always represent especially good performance for their price.



Best In Test

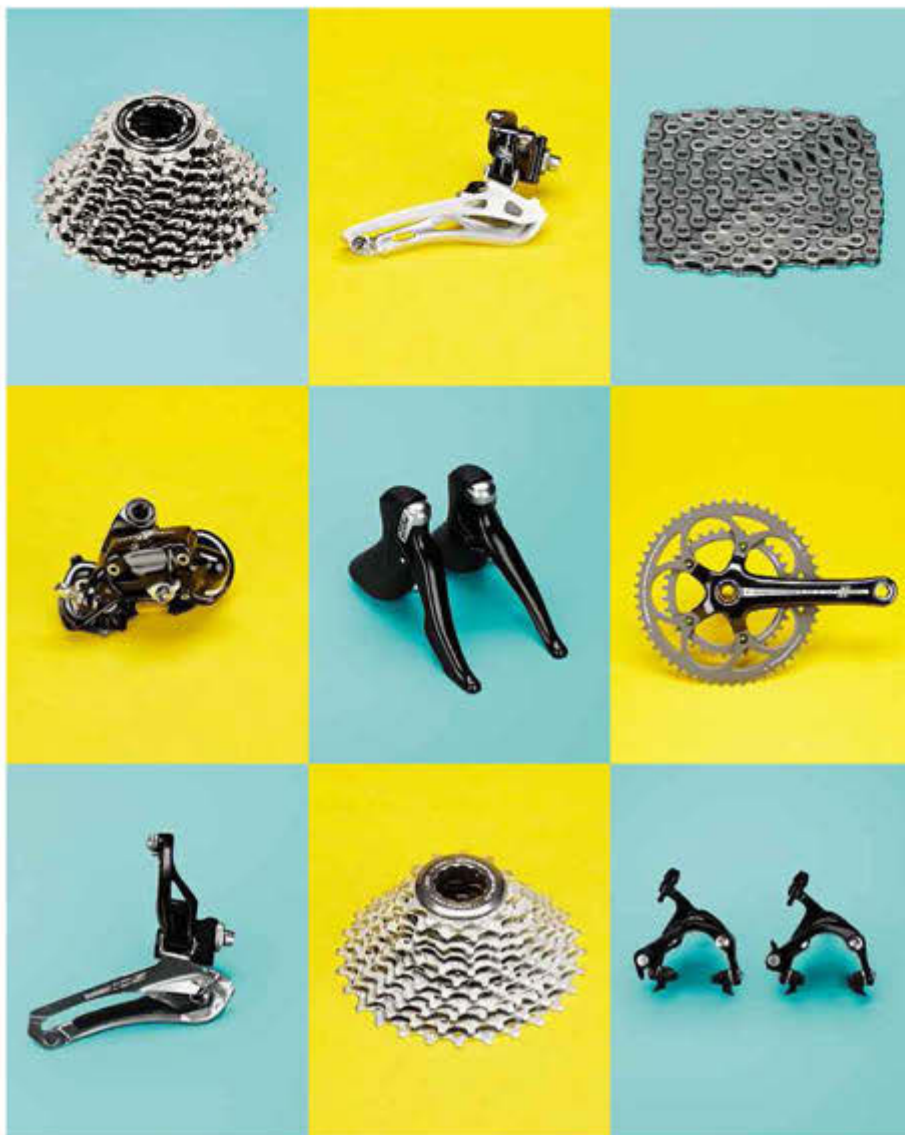
The overall winner in each test. Scoring highly in all criteria, this will be an excellent all-rounder, often with an extra something – a touch of style, a special feature – that sets it apart.



BikesEtc Gold Award

This award goes to bikes, kit or components with exceptional levels of performance and design. Don't expect to see it every issue – we only hand it out when it's truly deserved.

ED'S LETTER



When I first saw the Tour on Channel 4 in the mid-80s, it looked like nothing on earth – or suburban Hertfordshire, at least



Wesley Doyle, Editor

At the time of writing, we're still being distracted from work by the Giro and the UCI's unrelenting search for hidden bike motors. Inevitably, though, our minds are turning to the Tour de France, looking forward to following the drama and of course the deadpan comments from Gary Imlach and Chris Boardman. Knowing that the highlights of each day's stage will sit high in the ITV schedules reminds me of how far the sport has come in the UK since I first saw it on Channel 4 in the mid-80s. With its classic theme tune (by Pete Shelley of Buzzcocks, no less) it was a riot of noise and colour, and looked like nothing on earth (or suburban Hertfordshire, at least).

Our contribution to this year's Tour coverage is the free magazine that comes with this issue. Rather than just a list of teams and stats, we've put together a guide gives you that info plus shows you what it takes – training, kit and nutrition – to get through three weeks of cycling and suffering.

Someone who knows all about that is Team Sky's Geraint Thomas and we talk to him in this issue about his Tour plans and also his love of a good pizza.

The subject of the Tour crops up again in the first piece from our new columnist, *The Cycle Show's* Matt Barbet. Cycling is a passion for the TV presenter and this issue he gives us his unique perspective on 2014's Grand Départ and his hopes for the British riders in this year's race. Like us, Matt is a cycling fan who's lucky enough to make it part of what he does for a living and we hope this shared passion comes across in every issue of *BikesEtc*.

BikesEtc

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Switchboard: +44 (0)20 7907 6000

Advertising: +44 (0)20 7907 6714

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BikesEtc, Dennis Publishing,
30 Cleveland Street, London W1T 4JD
Facebook: [facebook.com/bikesetcmag](https://www.facebook.com/bikesetcmag)
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Editorial

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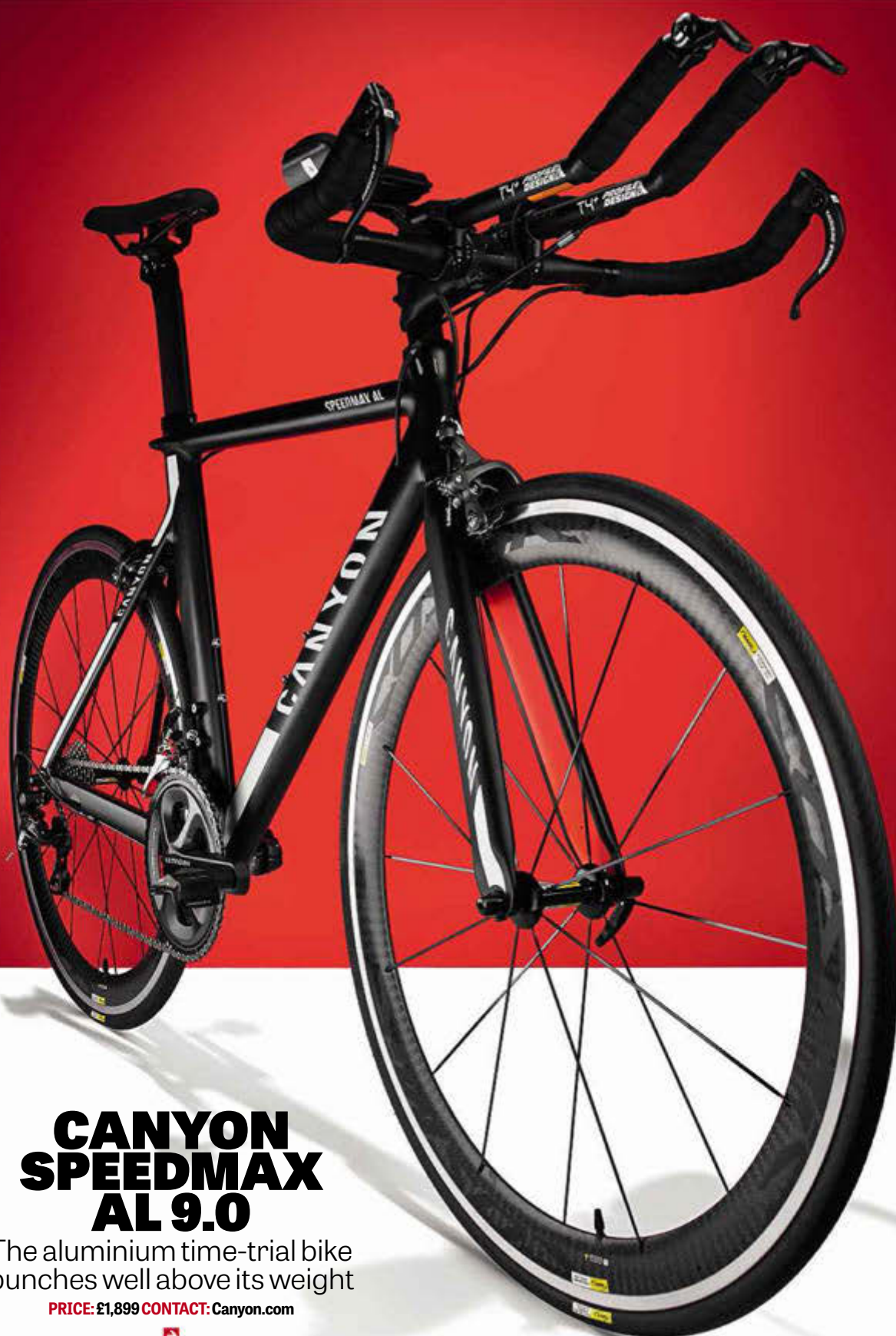
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CANYON SPEEDMAX AL 9.0

The aluminium time-trial bike
punches well above its weight

PRICE: £1,899 CONTACT: Canyon.com



WHAT'S IN A WHEEL?

The pros and cons of deep-section rims

Deep-section wheels don't just look flash, they take big chunks out of your time. Mavic was marketing aerodynamic wheels in the '80s, but is now just one of many brands focussing on aerodynamics.

The thinking behind it is the basic aerodynamic idea of separation: if the wall of the wheel continues behind the rim, the air will become more streamlined around it, and less turbulent (and slow) in the open air. Aerodynamicist Simon Smart, developer of Enve's aero wheels, explains, 'If you can reduce the drag on the front wheel, you have less

messy flow to go through the rider's legs and the whole thing amplifies.' Studies suggest that up to 90 seconds per hour of cycling can be saved with deep-section wheels.

In recent years, discussion has turned to yaw angles (the angle at which the wheel hits the air), with Zipp and Enve wheels being designed to go quickly and remain stable in strong sidewinds. In aerodynamics, often where you make gains you make sacrifices too, so the deeper the wheel the less stable it may be. Choosing the right wheel is a balancing act.



Mavic Cosmic Carbone wheels are a rare sight on a bike under £2,000

A

side from Bradley Wiggins, few cyclists could claim to go faster than Alex Dowsett at full gas. The Brit managed to ride just shy of 53km in a single hour, and did it aboard Canyon's flagship Speedmax CF. While few of us could get within a

country mile, or 10, of that, the Canyon Speedmax AL offers a chance to use some of the filtered-down tech that carried him to the world-beating distance.

Since 1987, Canyon has prided itself on the Germanic logic that while some people prefer to go to a bike shop to pick up a bike, others are perfectly happy to receive a box in the post. Nowadays, by selling directly online, Canyon can offer thrifty packages such as the Speedmax AL. At less than £2,000 it is in rare company among time-trial frames, and seems to punch well above its weight.

Aluminium is unusual in time-trial bikes, as it largely prohibits the type of streamlined aerodynamic shapes that are desirable when racing against the clock. 'For more modern TT bikes, carbon is the material of choice,' explains Canyon's Product Manager Sebastian Jadcak. But Canyon saw merit in the aluminium aero dream. 'Our

Frame F8 ultralight 7005 aluminium frame, carbon-fibre aerodynamic fork

Groupset Shimano Ultegra 11-speed, 52/36 chainset, 11-25 cassette

Bars Profile Design T2 Plus Aluminium Aerobars

Stem Canyon V15

Saddle Fizik Ardea TRI

Seatpost Canyon S10

Wheel Mavic Cosmic Carbone SL S WTS

Tyres Mavic Yksion Pro GripLink, 23c

Weight 8.95kg

Contact canyon.com

Speedmax AL frameset is the aluminium version of our former Speedmax CF frameset, but has actually outlasted that former carbon version in the market,' Jadcak explains. 'The CF version was tested in the wind tunnel during development, and we tried to recreate more or less the same shape on the most important tubes of the AL.'

With its very deep down tube, the Speedmax AL has an unprecedented design for an aluminium bike, resembling the carbon-framed Cervélo Soloist of the early 2000s. It's a tough feat in engineering terms. 'The juncture between seat tube and top tube is a tricky piece of production called electrical discharge machining [usually used for intricate and technical metal structures]. The up side of aluminium is that Canyon has been able to spend more on the rest of the bike – making a huge difference to speed.

The Mavic Cosmic Carbone wheelset is a striking addition to a bike at this price, usually reserved to builds of twice the cost. Indeed, if retail costs were to be believed, the Shimano Ultegra 11-speed groupset and Mavic wheelset would eclipse the total price of the bike by themselves.

Normally, a TT bike comes equipped with entry-level wheels on the assumption that you have your own, but with the Cosmic Carbone, the



The cutout seat tube is an unprecedented design feature on an aluminium frame



Speedmax is immediately race-ready out of the box. For comparison, we switched in a set of super-pricey Zipp 808 wheels, and although there was an increased sense of acceleration (and a slightly more expensive-sounding noise) the overall speed was not all that different. For a newcomer to the triathlon or time trial, the rest of the build offers a bounty of easy and intuitive experimentation.

The Profile Design T2 wing handlebar may look like an agricultural implement but it offers heaps of adjustment – as does the conventional stem, which means finding your most aerodynamic position should be quick and straightforward compared to the integrated solutions of some high-end time-trial bikes, which need complete dismantling to add even a centimetre of height to the front end.


With time-trial bikes, though, there are only two things that matter – the road and the stopwatch. We tested the Speedmax at a series of local 10-mile time trials and a longer team time trial, and the results spoke for themselves, coming within seconds of previous outings on bikes four times the price.

We were left feeling that the speed wasn't just a consequence of the Canyon's kit, either. The frame feels stiff from the outset, and never felt particularly heavy on the road despite its chunky 1.720g mass.

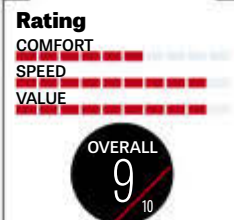
The fork also did a lot for the handling and response of the bike – the same fork was used for the top-end carbon TT frame too until its latest update. The frame is surprisingly rideable, and we managed a few three-hour rides without feeling battered in the intimate regions. Comfort was never a problem either, thanks to the adjustability of the overall build.

With an intuitive seat clamp system and a conventional stem and handlebar set-up, we were able to quickly and accurately experiment with a wide range of positions and angles – achieving the sort of improvements that might take months of tinkering with a more technical set-up.

However, that simplicity is also the ultimate limitation of the bike. The Speedmax AL lacks the aerodynamic detail that the very top TT bikes and aero road bikes demand. Where every watt matters, exposed cables and brake callipers pointing into the wind are unacceptably inefficient when you reach the point of trimming seconds off your PB.

True speed fanatics often invest everything in the frame, penny pinching year to year to upgrade to a world-class set-up, and may feel limited by the basic AL design. But for newbies and fair-weather chancers keen on time trials, it promises all but the most marginal gains of Canyon's time-trial champ. 

Canyon's penchant for Germanic logic means you can receive a thrifty packaged bike in the post



APRIRE INVERNO SORA

This ambitious British brand's first sub-£1,000 model brings bike building back home

PRICE: £650 **CONTACT:** aprirebicycles.co.uk

O

n the face of it, the Aprire Inverno could just be another good-looking, surprisingly good-value starter bike, but delve a little deeper and you'll discover this could be

the start of something much more exciting.

When Phil Dempsey started Aprire five years ago in southwest London, it was off the back of a career working in the Far East as an engineer in the bike industry. He had the contacts, he had the engineering skills, and he had the passion to go it alone, having realised he could do things better himself. So he did, and Aprire was born. It's been a slow build, but as Dempsey says, 'I'm an engineer, I can't do marketing for toffee.' Carbon and aluminium frames are made in Asia to his exacting standards and shipped to the UK for painting and building. Now though, it's time to grow, and to do that, Aprire is bringing much of its manufacturing back to the UK, where the advantages of on-shoring will mean greater agility, better productivity and carbon frames with a smaller carbon footprint.

'The idea of bringing carbon back to the UK is one, quality control; two, we can bring down lead times; and three, the costs are almost the same – we'll be a little bit more

The main tubes are bog-standard, but the bike rides like an expensive machine

than China, that's inevitable, but the fact that we can do it quickly, and do custom stuff as well, means it makes sense.'

Much of what Dempsey has learned from carbon has gone into the aluminium frame of the Inverno, which, while undoubtedly a budget-conscious offering, sports a unique tapered head tube design, and clever shock-reducing (but still stiff) seat and chainstays. The main tubes are off-the-peg, bog-standard 6061 (a material Dempsey believes is far preferable to 6066-grade alloy we often see coming from China now), but by speccing tailored elements, the Inverno rides like a more expensive machine. It's a frame that's been in the pipeline for almost a year, but thanks to the vagaries of Chinese manufacturing and long lead times, it has only just been launched – in fact, it should have been available for about a week by the time you read this.

Frame: Aprire 6061 Alu, full carbon fork

Wheels: Mavic Aksium

Tyres: Mavic Aksion, 23c

Bars: Dedacciai

Stem: Dedacciai

Saddle: Prologo Kappa

Seatpost: Ritchey

Price: £650

Weight: 8.89kg

Contact: aprirebicycles.co.uk

The custom tapered head tube houses a full carbon fork

Quality components include the Prologo Kappa saddle

The split and shaped seatstay reduces shock when on the road

Mavic Aksium wheels on a bike that costs £650 are an absolute steal



'Bringing manufacturing back is interesting and if you do it correctly, it can be done successfully. But if you run with any inefficiency, you're stuffed – the Chinese idea of efficiency is just to throw more people at it, and we can't do that here.'


Dempsey plans to have enough capacity at the new Aprire facility that there will be space to manufacture frames for other smaller brands too. This already happens in Italy, where lots of bike frames from a broad spread of manufacturers come out of a small number of factories – they're all built to their own brand's specification and design, but they're not necessarily built by the brand itself. 'We're gearing up for 30,000 carbon frames per year and 200,000 aluminium,' says Dempsey, 'Aprire will just be a small chunk of what we make.'

When it comes to carbon, a point of difference for Aprire will be that it will be able

to produce its own carbon tubes and lugs, rather than relying on off-the-shelf offerings bought in from China. The tubes and lugs will then be joined together through the tube-to-tube process, which ends up lighter and, if done correctly, can be stronger than a monocoque.

Anyway, back to the bike in hand, the Inverno. It's £650, it has a full Shimano Sora nine-speed groupset (it even has the rarely seen Sora chainset), Mavic Aksium wheels (bargain) and branded finishing kit from Dedacciai and Ritchey. The fork is carbon with a tapered carbon steerer tube, and production bikes will come with mudguard eyelets (we tested a pre-production model). All Aprire frames are painted in the UK and it's fair to say the Inverno really doesn't look like a budget offering – the mix of blue and unpainted aluminium lends the bike a real air of classiness.

Hit the road and despite the 23mm tyres – which, having become accustomed to 25mm or larger, look very slender – the Inverno does a good job of soaking up road buzz. Those split and shaped seatstays at work? We reckon so. And at a full kilogram lighter than last issue's £500 group test winner, it surges forward with the urgency of a more expensive bike. The Sora equipment works well enough and at this price, Mavic wheels are an absolute steal.

The Aprire Inverno starts at £650 for the model tested here, and goes up to £1,195 for a Shimano Ultegra equipped bike. Our pick, though, would be the £995 Shimano 105 11-speed version. 

Rating

RIDE	■■■■■■■■■■
SPEC	■■■■■■■■■■
VALUE	■■■■■■■■■■

OVERALL
9
10



OAKLEY JAWBREAKERS

Polarised lenses polarise opinions

PRICE: £210 CONTACT: oakley.com

Mark Cavendish allegedly wins sprints because he can get much lower over the handlebars than his opponents, thus reducing his frontal area. The downside to his hyper-aggressive position is that visibility is hugely reduced – not that it matters, because he's at the front. Nonetheless, Oakley has been working with Cav and, after a mere 9,600 hours of testing, has come up with the Jawbreakers, which are designed to maximise the rider's field of vision.

It comes as a relief to us as we're

pretty confident poor peripheral vision is the only thing holding us back in the sprints. The side effect of this increased line of sight is a massive lens with a very distinctive look, akin to the LeMond-era Eyeshades, and the style divides the office. They come with a polarised lens but Oakley also offers them with its new Prizm lens, designed to increase contrast so you can spot hazards in the road more easily.

With the flick of a lever, you can adjust the length of the arms to suit your head shape. Changing the lens is an experience too thanks to the hinging mechanism that splits the glasses apart at the nosepiece.

VITTORIA QURANO 46 WHEELSET

Top-end race wheels featuring a new take on the cycling industry's favourite element

PRICE: £TBC WEIGHT: 580g/750g CONTACT: vittoria.com

Just as everyone was starting to get used to carbon, along comes another wonder material in the form of graphene. Any readers who paid attention in chemistry class and were about to scoff that graphene is carbon can award themselves a gold star – they won't need us to tell them that it is in fact an allotrope of carbon (a form of an element that changes its appearance thanks to its atomic structure).

Graphene's existence has long been theorised but it wasn't until 2003 that it was first synthesised. Despite its exceptional strength-to-weight ratio and thermal conductivity, it has only recently started to find its way into commercial products. Among the first are these tubular wheels from Vittoria, who reckon adding it to carbon fibre makes it stronger, stiffer and better able to manage heat build-up.

Available in three rim depths (46mm [pictured], 60mm and 84mm), Vittoria is providing them through neutral service cars at the Giro d'Italia, so they may even have taken a major race victory by the time you read this. Right now, you'll need to glue up some tubular tyres to take advantage, making them for racers only, but the drip of technology means a consumer-friendly option won't be far off. 🚴



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ADIDAS ADIZERO KIT

This featherweight kit will make those hot summer hill climbs a breeze

PRICE: jersey £100, Evasus bibshorts £120 **CONTACT:** adidaspecialtysports.co.uk



The weight of a bike and rider is a less-is-more thing, and Adidas has taken this to the extremes with a new addition to its cycling clothing range.

The idea of carrying as little weight as possible while still being clothed is embraced by this new kit, whose barely-there feel has been designed for agility and comfort in the summer months. Weighing in at a meagre 65g, the Adizero jersey's almost see-through appearance may force you to ask what you are getting for your money. But that's cycling, isn't it. As for the shorts, they're thankfully a bit more substantial than the mesh ventilated jersey underarms. Maintaining the weightless agenda, the Evasus bibshorts have a triple-density TMF pad to provide you with six hours of riding comfort, yet only add 99g to the rider's overall weight.

The success of this kit does, however, rely on one external factor that unfortunately, nobody has control of: the weather. Designed for scorching temperatures, it requires the sun to be shining over you and your ride, and if it does, then it should put you in good stead to stay cool when the cycling heats up. Remember to pack your sunscreen, as the generally transparent jersey is not guaranteed to protect you from UV rays.

BONTRAGER FLARE R REAR LIGHT

Trek make cyclists more visible around the clock

PRICE: £45 **CONTACT:** bontrager.com

It goes without saying that cyclists need to increase their visibility at night, which is why the darker evenings turn the UK's roads into streams flashing, pulsing pinpoints of light. Yet according to the Department of Transport, 80% of cycling accidents occur during the day. In response to this, Bontrager has designed the Flare R Rear Light specifically for daytime visibility.

According to company president John Burke, Trek wants every cyclist to be safe and the Flare puts them in both offensive and

defensive positions on the road. Its 65 lumens – produced from CREE LEDs – certainly do this with Trek claiming it can be seen, in daylight, from over 2km away. While we can't support that claim at the moment, it has to be said the Flare R is incredibly bright, so much so that it's the lower settings that are recommended for nighttime use – the full beam is just too distracting. The light also has 270° visibility and flash patterns designed specifically to, 'capture drivers' attention' (read: annoy the hell out of them). Either way, you'd have to have your eyes shut not to notice it. 



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BONTRAGER VELOCIS SHOES

Set phasers to salmon

PRICE: £140 CONTACT: bontrager.com

There's a scene in the classic 1984 mockumentary film *This Is Spinal Tap* where Nigel Tufnel explains that his amps are louder than everyone else's because they 'go to 11'. Marty asks, 'Why don't you just make 10 louder?' to which Nigel, assuming Marty hasn't got it, replies '...these go to 11.' These Bontrager Velocis shoes are rated at 10 on the stiffness index, which is pretty stiff, but the scale goes up to 14 – a potential four points stiffer. Quite how much stiffer that is we're not sure, but what we do know is that the saturation slider definitely went up to 11.

The Velocis use the Boa retention system combined with a strap at the toe. Boa is a wire and ratchet mechanism with tiny steps so you can dial in the fit with a lot more precision than other systems. It also makes it easy to adjust the shoe while riding. Until now, Bontrager has only used Boa

on its top-end XXX Road shoe (£260), so it's good to see the technology trickling down to this mid-range model.

As if these 'electric salmon' shoes weren't eye-catching enough, the meshed area at the rear of the shoe also has a reflective finish for improved visibility at night. First impressions are of a well-padded, comfortable shoe that should be perfect for long days in the saddle.



SVELTE CYCLES HERITAGE JERSEY

A classic, understated, merino wool jersey may sound familiar, but the price point is something completely new

PRICE: £60 CONTACT: kickstarter.com

Branding has always been key to the design of cycling attire, but having logos plastered all over your kit isn't for everyone. And counterintuitively, it would appear the more minimalist you go, the higher the price tag.

Tom Barber founded Svelte Cycles for this very reason. 'As a keen cyclist, I was frustrated at the lack of high-quality minimalist jerseys available for under £100,' he says. 'I searched high and low but couldn't find a brand or aesthetic that offered premium quality at an affordable price.'

Using the wonder that is Kickstarter, Barber has turned to crowd funding to make his dream jersey a reality. Made from a unique blend of merino wool and polyester – so you get the benefits of both a natural fabric and a synthetic – the Heritage jersey comes in a choice of three colours (navy blue, forest green and burgundy). The branding is subtle to the point of non-existence, with just a brass button on the back pocket and some nifty embroidery on the hip. The fit is described as 'athletic', which in our book translates as 'go up a size from normal,' but holds up well both on the bike and off. It's the price, though, that will really win you over as at £60, the jersey undercuts every other 'premium' cycling brand on the market by a huge margin.

Head over to Svelte's Kickstarter page and you can back a variety of packages, including arm warmers, base layers and bibshorts. The company will soon be launching a range aimed at the commuting market too. 🚲

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ANOTHER LEVEL

We took the bikes ridden by Philippe Gilbert, Marcel Kittel and Mark Cavendish to the Yorkshire Dales for a day of brutal crosswinds, phenomenal climbing and flat-out breakaways

WORDS **MARC ABBOTT** PHOTOGRAPHY **RICHARD BAYBUTT**

If Yorkshire didn't have a reputation for world-class cycling roads this time last year, it does now. The multicoloured masses of the WorldTour peloton moving through the Dales and hills of the county, brake pads squealing on carbon rims, gears engaging with (largely) electronic precision, left an indelible mark on the national cycling psyche – and a Tour de France legacy in the form of thousands of road cycling converts and a new pro race, the inaugural Tour de Yorkshire.

This is how we come to find ourselves in a long-stay car park in Richmond, 23 miles south west of Darlington, unloading a precious cargo of Tour de France-ready

equipment from the capacious boot of a Vauxhall Zafira, weighing up whether it's a leg or knee warmer kind of day.

I won't lie – clipping in and riding over to the pay-and-display machine on BMC's TeamMachine SLR01 hardly makes me feel like Philippe Gilbert or Cadel Evans (both of whom have taken notable victories on this bike, the latter famously winning the 2011 Tour de France on his). It does, however, give me the chance to fine-tune the set-up and spin the legs a little, after performing the now-obligatory *BikesEtc* public toilet changing room transformation from Midlander wrapped up against the cold to Lycra-clad Pro Team chancer. ➔

ON TEST



BMC TEAMMACHINE SLR01 £5,300



SPECIALIZED VENGE PRO RACE £4,200



GIANT PROPEL ADVANCED SL2 £3,999

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With all three bikes assembled and ready to roll, our small crew sets off to follow my sketchy directions southward, towards a date with the Yorkshire Dales and 1,250m of ascent. But it all starts with an unexpected teeth rattler, as Jason (aka Cav) on the Specialized Venge, lets the brakes off to judder down a cobbled hill. Austin (aka Marcel Kittel), harbouring thoughts of a race-winning move on his Giant Propel Advanced, follows, while I bring up the rear, scoping out my rivals.

White-knuckle ride complete, we kick up over a stone bridge that spans the River Swale and catch a view of Richmond Castle to our left as the road winds up out of the valley – and keeps on going. Although silently envious of my companions' deep-section carbon wheels and aero frames, for the first time today I'm thankful of my mountain-ready SLR01.

Under the weather

All three of our bikes are wearing 52/36, mid-compact chainsets, and they're a blessing on the rolling – or ascending – roads that typify today's ride. Jason and myself have a 28-tooth on the rear to resort to, but Austin seems to be doing just fine with his 25. I don't mention his gearing disadvantage, instead storing the information for later use in case I need to employ some mind games on the steeper climbs.

Clouds are gathering as we reach a plateau; tentative conversations about downpour avoidance begin, as the three of us line out and put it in the big ring to get down off this high ground in time to avoid being drenched.

Wallop! Preceding the rain moving in from the west is the mother of all crosswinds. The



group is shattered as Jason and Austin, at the front and rear, instantly feel the full force of nature working in perfect disharmony with deep rims. Austin mentions something about brown shorts, Jason suggests an echelon; we all leather it to the T-junction on my map, where hopefully, we can turn with the wind.

'That's the most scared I've ever been on a bike,' offers Austin.

'It's OK, I've checked the map,' I reassure him. 'If we make a left turn here, we'll have the wind on our backs from now on. Follow me...'

And the bikes come alive. Smooth tarmac and a rolling road combine with a 50kmh tailwind, putting all of us in the biggest



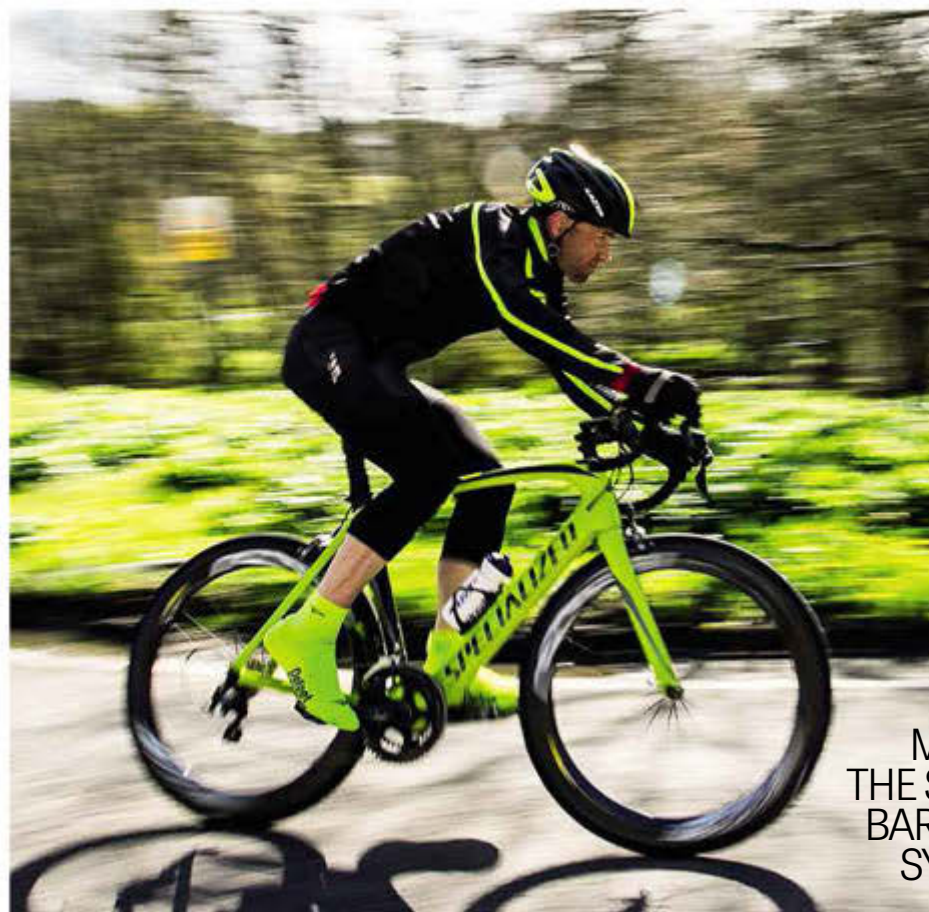
THE ROUTE

DISTANCE: 80km **CLIMBING:** 1,250m

TIME: 3.5-4.5hrs

GPS TRACK: [strava.com/routes/2278672](https://www.strava.com/routes/2278672)

Leave Richmond to the south, on the cobbled descent of Bargate. Keeping the castle on your left, cross the river Swale and stay along the ridge line for 8km. At the junction of the A6108, take a right for Leyburn. We turned left and stuck another 8km on the route, along Barden Moor, thanks to some iffy navigation... The road rolls for another 8km before a thrilling descent into the village of Redmire [1] – the entrance to the Yorkshire Dales National Park. The next 11km is mainly ascent, all the way into Askrigg, where the Askrigg Village Kitchen Tea Room [2] provides homemade soup and the finest cake known to man. Ride an easy 8km ride from here, then take a right turn after Sedbusk, following the brown sign for Buttertubs [3]. The road ramps up for 5km to the summit, reaching silly gradients. A 3.5km, 70kmh+ descent to a T-junction sees you take a right turn for Gunnerside and Reeth [4]. Follow this rapid, rollercoaster road for 26km back into Richmond.



MY BARE, RED CLAWS GRIP THE SUMPTUOUSLY WRAPPED BARS AS I TRY TO RECALL THE SYMPTOMS OF CHILBLAINS

BMC TEAMMACHINE SLR01

Built for the hills, but almost as good on the flat



Summary

When the road started to rise (so that's about 2km into the route), we'd never been so glad to have a pro team climber's bike beneath us. The same was true of the shallow-section DT Swiss rims when we hit 50kmh crosswinds and wobbled past MoD tank-testing facilities for the next 10km. We were sure we'd have the legs when it came to the big ascent of the day, and while the SLR01 was indeed the bike for the job of lumbering over Buttertubs, the rapid speed with which we dispatched the tailwind-assisted final leg would have been increased further with deep-section wheels. Of all the bikes here, this is the all-rounder. Our 1.71m rider used a size 51, with 535mm top tube.

Best points

A solid platform for attacking any climb, BMC's flagship model is stiff, nimble and even hangs with aero pro team bikes on rolling roads.

Worst points

The DT Swiss R20 wheels are good, but they're not brilliant; for climbing Buttertubs and battling crosswinds early in the day, we were grateful of them, but a team mechanic waiting with a set of Zipp 303s at the foot of the descent would've been welcome for the flat-out thrash to Richmond.



Price £5,300

Frame ACE Technology carbon-fibre, full carbon fork

Groupset Shimano Dura-Ace 11-speed, 52/36 chainset, 11-28 cassette

Brakes Shimano Dura-Ace

Bars 3T Ergonova Team

Stem 3T Arx 2 Team

Saddle Fizik Arione R3

Seatpost TeamMachine carbon

Wheels DT Swiss R20

Tyres Continental GP4000S

Contact evanscycles.com

Rating

FRAME
COMPONENTS
WHEELS
THE RIDE

OVERALL
8.3
10



WHY DO YOU BUILD ME UP?

Buttertubs, baby. If you hadn't heard of it before last summer, you'll know of it now. Scene of the Tour de France's first significant climb when last year's Grand Départ was hosted by Yorkshire, Buttertubs Pass is as famous now for stunning photographs of grass banks 20-deep with baying spectators as it is for being one of the county's (or indeed, country's) most testing cycling ascents.

Our Garmin recorded a maximum gradient of 27.5% for the steepest section of the 5km climb, but that doesn't mean it's insurmountable for anyone with a gear small enough, and a few miles in their legs. Unlike the twisting, brutal climbs of the Lake District, for instance, Buttertubs is largely straight, just steep. Get yourself into a rhythm from the moment you crest the first section of the climb from the main road, and be prepared to get out of the saddle for the sharper sections. Your reward for this effort is a stunning view and one of the most thrilling descents we've ridden. Jason topped out at almost 100kmh; having encountered a wandering pheasant on the same road last year, I knocked it down a bit and maxed out at 72kmh. Be aware that a few of the corners tighten up quickly, and take special care if the road's damp.

gear we have, swapping turns on the front in a three-man chain gang. I give everything I have, hands on the drops, listening to the other two bikes' wheels 'whump whump whump' like only a 60mm rim at speed can. Then I spot a sign for Richmond.

'Er... let's stop here. I think I've taken a wrong turn,' I apologise, as I glance northwards and see our starting point nestled in the valley to our left.

A few mumbled remarks and we about-turn, heading into power-sapping headwinds that limit us to 12kmh until we rejoin the correct road and head towards Leyburn.

The point at which we meet the storm is the point at which I glance across at Jason's face. He's gone full-on Paris-Roubaix with his grimace – as do I when the hailstones begin flying in horizontally.

Where the rubber meets the road

Once the deluge has passed, Austin rides up to my wheel. 'Aren't your hands cold?' he asks, gesturing at the bare, red claws gripping my sumptuously wrapped 3T bars. Actually, they're feeling pretty hot, I think to myself, trying to recall the symptoms of chilblains.

Finding some little-ring rhythm, the three of us plough on towards the village of Redmire, gateway to the Yorkshire Dales National Park. My brakes are rubbing ever so slightly, so I reach down and ease off the adjuster, vowing to sort them out when we're riding on the flat. It's at this point that a bit of pro-level route recon would have come in handy, as we're presented with a stark, triangular '14%' warning as we start the descent to the small village. Reluctant to rely upon my rear brake on still-damp roads, it's time to let off and work on honing my high-speed cornering craft. We stop at the bottom of the descent and I take the opportunity to realign the brakes and close the quick release. Fully.

Another castle appears on the ridge to our right as we leave Redmire, and Austin remarks that his daughters would love it as they're obsessed with Disney's *Frozen*. For the next 10km, I fail to get Demi Lovato's



WITH ANOTHER CASTLE IN SIGHT, I CAN'T GET *LET IT GO* FROM *FROZEN* OUT OF MY HEAD. IT'S THE EARWORM TO END ALL EARWORMS

Let It Go out of my head. It's the earworm to end all earworms, believe me.

Askrigg's Village Tea Room looms on our left as we enter the small, stone-built town, and as we unclip and stow more than 13 grand's-worth of pro race weaponry in the cafe's courtyard, enormous bowls of homemade soup are consumed while we talk over the performance of our bikes. Warmed inside and out, we also spend some time discussing what's to come on our route, as I attempt to put the frighteners on Austin and describe the gradient of Buttertubs Pass just a few kilometres up the road.

When, 8km later, we arrive at the signpost that bears its name (and which might otherwise state 'abandon all hope'), we turn sharply right and immediately begin the 5km ascent of this behemoth of Yorkshire cycling.

What surprises all of us isn't the sections of 20% (or more) gradient that punctuate the well-surfaced ascent, but the ease with which the two aero bikes are making the



WE STOP AT THE
SIGNPOST FOR
BUTTERTUBS
PASS. IT MAY
AS WELL READ
'ABANDON
ALL HOPE'

2

SPECIALIZED VENGE PRO RACE

Super-stiff, super-quick, but slightly flawed in the comfort stakes



Summary

Yes, the ride is a little harsh, but the performance of the Ultegra groupset allowed Jason to get the most from this sprinter's delight. The handling was sharp and precise, the hum from the 60mm-deep rims of the Roval carbon wheels one hell of a soundtrack. Given their profile, Jason reckons they were stable in the crosswinds we battled. I wished I had a GoPro on the BMC bars so I could show Jason how much he was having to fight the bike to stay upright... The Venge won our top-speed contest, nudging 100kmh on the descent from Buttertubs, confirming in the process that SwissStop pads on carbon rims work amazingly, especially for the off-camber, 90-degree bend at the bottom. Our 181cm rider chose a 56cm frame, with 565mm top tube.

Best points

The bike came into its own when we were sprinting. All the power going through the pedals is transmitted to the road via that gorilla's fist-sized bottom bracket area.

Worst points

Jason wasn't a fan of the Venge's aero-shaped bars at all. When climbing, they got in the way of achieving a comfortable position with hands on the tops.



Price £4,200

Frame Specialized FACT carbon-fibre frame and fork

Groupset Shimano Ultegra 11-speed, 52/36 chainset, 11-28 cassette

Brakes Shimano Ultegra

Bars S-Works Aerofly

Stem Specialized Pro SL

Saddle Body Geometry Romin EVO Expert

Seatpost FACT carbon

Wheels Roval Rapide CL60

Tyres Specialized Turbo Pro

Contact
specializedconceptstore.co.uk

Rating

FRAME
COMPONENTS
WHEELS
THE RIDE

OVERALL
8.1
10

GIANT PROPEL ADVANCED SL2

Rapid, responsive and a better all-rounder than you'd think



Summary

This isn't a bike intended for climbing mountains, but the stiffness of its frame and wheels made the Giant versatile beyond our expectations. When you get out of the saddle, the speed with which the bike picks up is really impressive. You might expect Dura-Ace for this money, but what Giant appears to have done is invest in the frame rather than shed a few grams with a lighter groupset. It's had the desired effect. Our 175cm rider rode a size S frame, with 535mm top tube.

Best points

The SL2's frame stiffness was a real positive on the slopes of Buttermere and when riding anywhere flat-out. It allowed Austin to make the most of every little effort. The 11-25 cassette was plenty enough for the climbing, and perfect for the flat-stick lead-out, where the Propel was most at home.

Worst points

The only negatives we found with the Propel were a grabby rear brake, a tendency to hit our knees on the looped gear cable housing which rises up around Giant's stem when climbing out of the saddle, and some rear-end twitchiness over 35kmh.



Price £3,999

Frame Advanced SL-Grade carbon-fibre frame and fork

Groupset Shimano Ultegra 11-speed, 52/36 chainset, 11-25 cassette

Brakes Shimano Ultegra levers; Giant SpeedControl SL Ti callipers

Bars Giant Contact SLR Aero

Stem Giant Contact SLR

Saddle Fizik Arione R3

Seatpost Integral to frame

Wheels Giant P-SLR 0 Aero WheelSystem

Tyres Giant P-SLR1

Contact giant-bicycles.com

Rating

FRAME
COMPONENTS
WHEELS
THE RIDE

OVERALL
8.9
10

climb. Austin, on the Giant, isn't lacking anything in the gearing department, while the Venge is slowly grinding its way skyward. I stick the SLR01 in the second-easiest gear and have and spin to the summit, leaving the saddle to push over the climb's several crests.

Joyride

There's snow on the ground. Small puddles of snowmelt accumulate at the roadside while we try to make out the faded slogans still written on the tarmac by last year's Tour tifosi. Although they're mainly messages for Team Sky, we do appreciate the effort, and feel propelled by them.

But gravity does that job just as amply once we're over the top, as the descent down the north face of Buttertubs rockets us to silly speeds. I meet Jason at the bottom. 'Been here long?' I enquire. He's seen almost 100kmh on his computer, and is grinning like a madman.

It's time to impart some meteorological news that will prolong that smile, as we now have a 26km ride back into Richmond that finally gives us the benefit of riding out into 50kmh winds. It's on our back all the way ➔



MIX IT WITH THE PROS... AND US

If you're a rider who likes to batter a few well-chosen hills on a route to bag some Strava KOMs, you'll be in esteemed company in this part of the Dales.

Eye the segment leaderboard for the full south to north ascent of Buttertubs on Strava, and you've extra motivation to dig a little deeper to reach the top 10. The KOM is held by Cannondale Garmin's Ted King, who smashed out a 16m 5s ascent in last year's Tour. He's followed by Astana's Lars Boom two seconds down, and what follows is a who's who of Tour de France Strava users... Niki Terpstra, David López, Thibaut Pinot, Laurens ten Dam...

The fast road from the foot of the descent to Reeth was also used on the 2014 Tour route, so if you think you've got it in you to better the 49.3kmh average of Team Sky's David López over the 6.2km smash from Gunnerside to Reeth, belt it. Our 32.9kmh average is for the taking, too – join the *BikesEtc* group (strava.com/clubs/BikesEtc) and see where you rank among your fellow readers.

A DAY THAT GOT OFF TO SUCH A SODDEN START HAS ENDED ON A MASSIVE HIGH. BIKES WILL DO THAT TO YOU





home, so we get to experience these bikes in full-on ‘race-winning breakaway’ mode. The road rises, falls, turns gently and dips lightly again as we chip along at 30kmh+ for the remainder of the ride. Any short ramp is walloped in the big ring; we’re wheel-to-wheel, me holding on to the back, the other two revelling in the free speed offered by their deep-section wheels at this velocity. ‘It feels like a double-tailwind,’ shouts Austin, as the Propel beneath him comes fully alive. It’s Cav versus Kittel up front as I try to take it all in. How does a day that starts in such a sodden way end on such a high? Yes, bikes will do that to you. But more importantly, when a bike of this calibre is ridden in the way its makers intended – either with sure-footed climbing prowess or outright lead-out train rapidity – there is nothing that comes close to this level of exhilaration on the road, except doing it in the heat of a race, or watching the professionals at work. Excuse us for a moment while we book our Eurostar tickets. 🚲

THERE'S NOTHING THAT COMES CLOSE TO THIS LEVEL OF EXHILARATION ON THE ROAD



HOW THEY STACK UP...

BMCTEAMMACHINE SLR01	SPECIALIZED VENGE PRO RACE	GIANT PROPEL ADVANCED SL2
<div>1</div>	<div>2</div>	<div>3</div>
FRAME		
COMPONENTS		
WHEELS		
THE RIDE		
OVERALL 8.3 / 10	OVERALL 8.1 / 10	OVERALL 8.9 / 10

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Workshop

WORDS **GUY ANDREWS** PHOTOGRAPHY **TAZ DARLING**



Veteran cyclists will tell you that maintaining and repairing your own bike can be an extremely rewarding experience, one with obvious financial benefits too. For many though, their local Independent

Bicycle Dealer (IBD) is a place of mystery. Strange looking tools hang from the walls while pots of brightly coloured fluids and unguents sit on workbench tops, with oily rags, latex gloves and the latest issue of *BikesEtc* (obviously) laying close to hand.

While it may seem that there's some serious alchemy at work, the reality is far more prosaic. Of course, workshop mechanics have had many years to build up their bike knowledge and hone their skills but the fact remains if you can manage to assemble a flat-packed IKEA kitchen unit, with a bit of practice a modern bicycle shouldn't cause you too many problems. Never has the bicycle been simpler to maintain, with

manufacturers making components easier to service and install. And as many of them are now disposable, even jobs such as replacing a drivetrain, although often eye-wateringly expensive, can be relatively straightforward.

The only limiting factor will be the amount of time it takes you to do the job, but seeing as any IBD worth its salt will have a long waiting list for repairs, a bit of DIY may not lose you as much valuable riding time as you might think.

At its most basic level, the main difference between you and your IBD (apart from the years of hard-earned experience) is that they'll have a well-tooled dedicated workshop. However, if you've bought your first multitool or set of allen keys, you already have the beginnings of your own bike workshop. It's the next purchases and the complexity of the jobs you intend to do with them that take your skill set from newbie to mechanic.

CLEANLINESS PAYS OFF

One word of warning though: it's best to make sure you're familiar with the components on your bike before attempting to strip and rebuild it. And one way to do that is to keep it clean and in good working order:

BASICS

JOBS: Repairing punctures, making adjustments (saddle, handlebars), basic cleaning

TRACK PUMP

Essential for home and travel. Makes light work of pumping tyres. Be aware that some cheaper pumps either have an inaccurate gauge or no gauge at all. It's worth buying a digital gauge to get the tyre pressure accurate.

BUY: Topeak Transformer X track pump/workstand, £90, extrauk.co.uk

CLEANING ITEMS

Every mechanic has their own favourite degreasers and cleaning products. Old cotton T-shirts, tea towels and bed sheets make great rags as they tend to be soft and absorbent. Degreasers by Finish Line are especially good, as are their lubricants, because they're formulated specifically for use with bicycles.

BUY: Finish Line Teflon Grease, £22.50 (455g), wiggle.co.uk

MULTITOO

The multitool should cover all of the allen key sizes on your bike. It should also have screwdrivers and Torx drivers too. Some come with emergency chain tools but be aware that their size and quality can mean that they are for emergencies only.

BUY: Topeak Mini 20 Pro, £29, extrauk.co.uk






Household pets aren't an essential workshop item but may be useful if trained to fetch and carry tools

Weekly cleaning means you'll notice parts wearing out before they become a problem

when it comes to the mechanics of a bicycle, prevention is always better than cure and a weekly cleaning routine is one of the best ways of achieving that. It'll only take half an hour and getting close to your bike also means you'll notice components wearing out before they become a problem out on the road.

Always wash your bike and dry it straight after a wet ride. It may sound like the last thing you'd want to do after four hours in the pouring rain, but it will save you time as the brake residue, road muck and oil comes off much easier when the bike is still wet. Use a degreaser on the chain, cassette and jockey 

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wheels and re-lube with good quality oil. Replace chains regularly, as once they're worn and stretched, they start to wear out other more expensive parts. Most chains start to deteriorate after around 2-3000 kilometres. And always use quality brake pads and cables – not only do they work better, they also last longer than most budget versions.

GET THE BASICS RIGHT

Go into any professional workshop and you'll see a tidy (mostly) space with a full tool board and all the essential items close to hand. However, one of the rarest commodities these days is space and if you cohabit, trying to convince your other half that you need to annex the living room for your own private workshop normally gets pretty short shrift. Fortunately, most basic bike maintenance requires fewer tools than once was the case, so solutions are available if you're stuck for space. A portable workstation can be wheeled into a corner and should be stable and secure enough to mount a vice onto, saving space and solving tool storage problems in one go. Bear in mind, though, they can get very heavy when filled with tools, so may not be the best option if you live in a third floor flat.

To quote the old adage, 'You cannot shoot a cannon from a canoe,' which translated



Most bike maintenance jobs don't require that many tools

EXPERIENCED

JOBS: Replacing chain, changing cassette

MID-PRICE BIKE STAND

If you don't have much to spend, a basic bike stand (see next page) is better than nothing but a little more money buys you more stability and better materials that will last longer. To the pro mechanic, the work stand is the key tool – they need it to be reliable. A good stand will also last a lifetime of home repairs, while a budget stand might need replacing after a few years. If you want to avoid buying twice look for a better quality stand.

BUY: Feedback Sports Pro-Elite Repair Stand, £250, 2pure.co.uk

QUICK LINK REMOVER

Depending on the manufacturer, modern 10 and 11-speed chains need a special link of some description to join them once they are cut to the right length. The best and easiest to use system is the quick link used by SRAM and KMC (who also make versions suitable for Shimano and Campagnolo chains). They allow you to remove the chain and replace it without complicated procedures – a spare is always worth carrying in your repair kit on the road in case of emergencies. The pliers to remove the link are a good investment:

BUY: Park Tool MLP1.2 master link wrench, £15, wiggles.co.uk

CHAIN WHIP AND CASSETTE LOCK RING TOOL

A chain whip and a cassette tool are essential for removing and replacing cassette sprockets. Be careful to get the right fitting for your bike as Campagnolo and Shimano have different pattern lock rings.

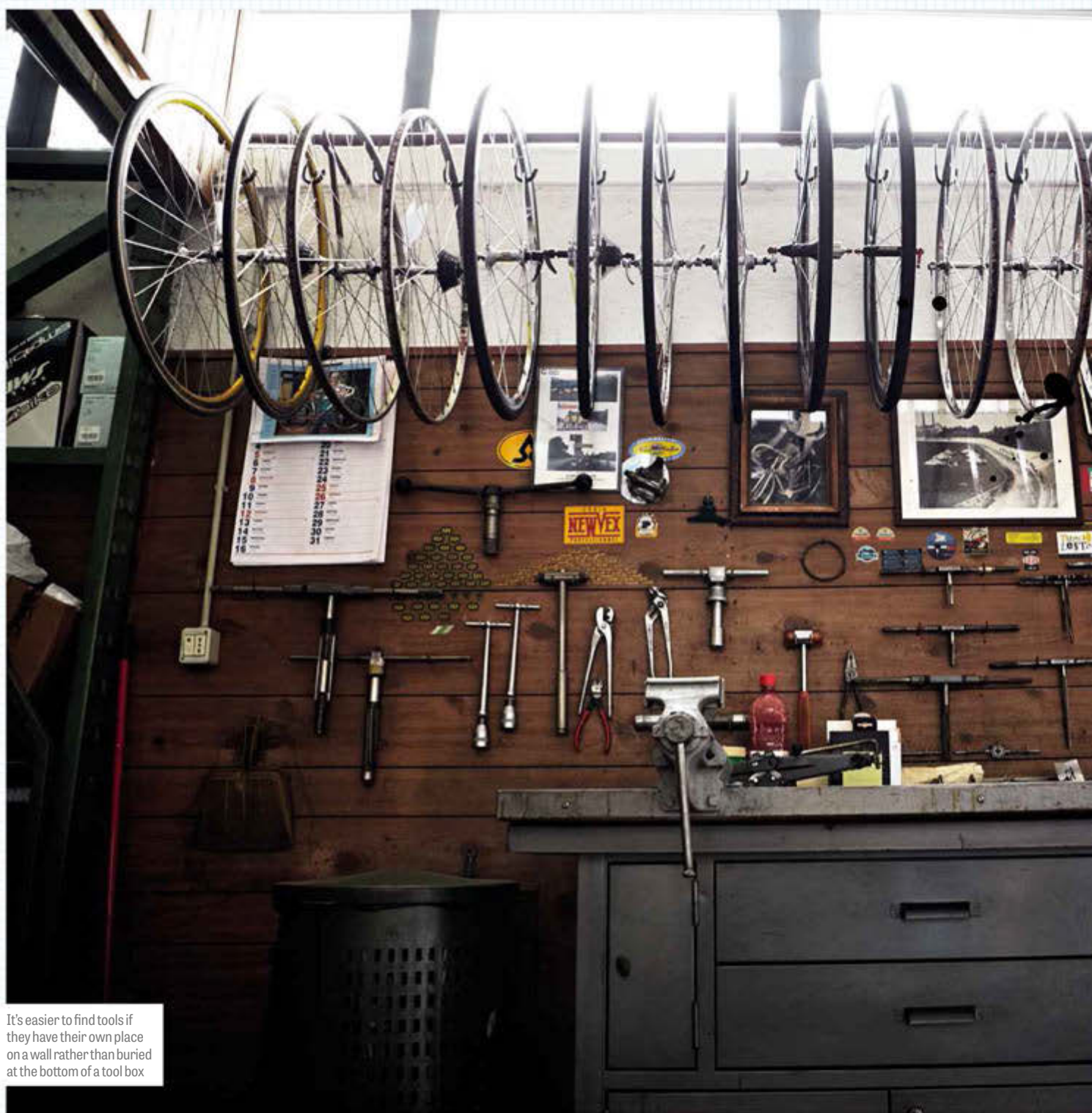
BUY: Park Tool SR1 chain whip, £22, chainreactioncycles.com

CHAIN TOOL

Campagnolo, Shimano and SRAM 11-speed means (whatever they say to the contrary) we now have some sensible compatibility in the drivetrain. The journey has seen 8, 9, 10 indexed gears and has meant a bunch of tools for one type of chain or another over the years. Shimano's HG workshop tool never seems to wear out and Campagnolo tools are always a pleasure to use. Experience tells us that you get what you pay for, and make sure you buy one that has a replaceable pin.

BUY: Park Tool CT3.2 chain tool, £30, madison.co.uk





It's easier to find tools if they have their own place on a wall rather than buried at the bottom of a tool box

Running a pro workshop and keeping it up to date is very expensive

into practical, everyday advice means a heavy-duty workbench must be the foundation for your workshop planning – anything lightweight will cause trouble and a secure vice will make life much easier.

The best workshops have the walls full of tools, as a place designated for each tool helps identifying and speeds up repair time. Finding the tool you need in the bottom of a tool box can often take twice as long as the repair itself, so make sure they're put back in the same place. Colour-coding tools for quick identification is now popular with toolmakers and many mechanics engrave their tools with their initials so they don't go walkabout.

For those mechanics who have been plying their trade for a while, their tool collection maps out their career with some kept for sentimental reasons as well as practical. When embarking on a home workshop, though, buying a complete tool kit is a great idea, as long as you keep in mind the type of work you want to be doing.

BUY CAREFULLY

While complete tool kits usually provide value, it may also include some tools that you may never use, as well as lack ones you do, depending on your ambitions. If you want to learn how to bleed disc brakes or fit



electronic gears, for example, it's unlikely that your off-the-peg kit will include the tools needed to complete those jobs. But bear in mind how many times you plan on carrying out those particular repairs. A professional shop mechanic will have to fix bikes from a variety of eras and manufacturers, so they tend to collect tools and keep them – some are used just a few times and then retired, so running a workshop and keeping it up to date is very expensive. For the enthusiast, buying bottom bracket or headset tools is a bit of an extravagance, especially when most new bikes have pressfit systems nowadays. If you've just bought a new bike, ask your

ESSENTIALS

JOBS: Changing brake pads, removing pedals, breaking bike down to travel, advanced cleaning

GREASE/GRIP PASTE

Cleaning and rebuilding sensitive parts needs the right cleaning power and lubricant. The modern bicycle has some high-tech materials that require care and regular check-ups to ensure safe use. Slipping and creaking can often be a problem with the interface between materials. Your bike shouldn't make a sound – if it does, it's trying to tell you something's wrong. Carbon fibre needs specific attention, especially seatposts and handlebars.

BUY: Fiber Grip carbon fibre assembly gel, £10 (50ml), madison.co.uk

ALLEN/HEX KEYS

Check out what sizes your bike uses as some cranks use up to 15mm bolts and that's not a size you find often. Cheap allen keys won't last and can damage bolt heads.

BUY: Park Tool professional hex wrench/allen key set, £20, madison.co.uk



BUDGET BIKE STAND

Most budget work stands will all hold the bike off the ground, but they will never be as solid as a pro-shop stand. Materials will be cheaper, the working height may be compromised and they have a habit of tipping up when least expected. The rule of thumb is that the more you spend, the better the stand; the best ones have a heavy base and a good working height. The Feedback stand is stable and practical and packs away fairly small, so if you have to fix your bike in the kitchen, it's a good choice. The base of all Feedback stands is a tripod configuration that's hard to tip over even on rough ground.

BUY: Feedback Sports Sport Mechanic Bicycle Repair Station, £150, 2pure.co.uk

CHAIN CLEANER

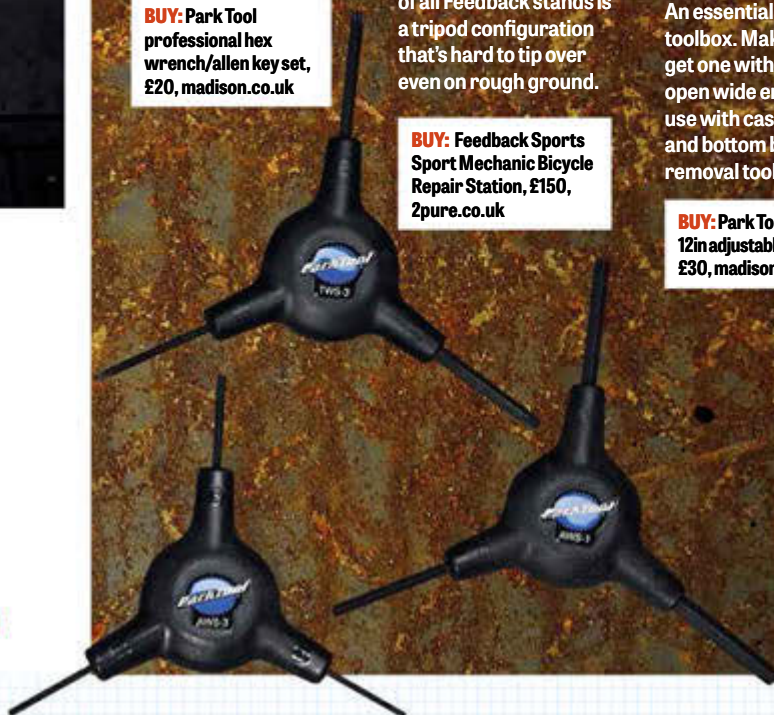
Chain cleaners are best used regularly – if used once a week, they can extend the chain's life considerably. Having a place to clean the chain is essential as it's a messy business. Use a bio-degreaser and wash the chain near to a drain – if this is outside on the road, make sure to clean up properly afterwards and do not leave any residues on walkways or pavements.

BUY: Pedro's Chain Pig, £25, 2pure.co.uk

ADJUSTABLE SPANNER

An essential item in your toolbox. Make sure you get one with jaws that open wide enough for use with cassette tools and bottom bracket removal tools.

BUY: Park Tool PAW12 12in adjustable wrench, £30, madison.co.uk



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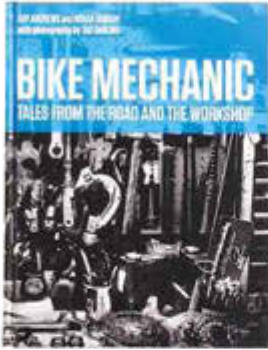


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Bike Mechanic: Tales From The Road And The Workshop by Guy Andrews and Rohan Dubash (£30, bloomsbury.com) is packed with tricks of the trade from some of the world's top pro mechanics



Faliero and Alberto Masi's workshop in Milan reflects their many years involved in the bike business

NON BIKE-SPECIFIC TOOLS

If you've got a basic household tool kit you've probably got most of these already, but if not they'll come in handy for basic bike repairs too...

- Metric spanners
- Hacksaw (including carbon fibre blades)
- Metal files
- Electric drill and bits
- Screwdrivers (including both cross-head and flat blade)
- Pliers (needle nose and flat ended)
- Rubber mallet
- Apron
- Gloves
- Swarfega



It may lack character, but Vittoria's workshop in Bergamo is a model of efficiency and order


dealer what tools are required that you may not already have, especially if you're changing component manufacturer. Then check the manufacturer's technical websites as they will often have recommendations and sometimes video clips of how to fix problems and what tools to buy.

Professional team mechanics will usually have more than one tool kit as they travel to the races and will need to take tools for any emergency – especially important if they're in the team car as support during the race. In the same vein it's worth having a smaller kit yourself that you can pack in the car when off to events, it's also worth keeping it near the front door, if possible, for those last-minute tweaks before heading out for a ride.

Packing your bike in a bike box ready to fly also means you may want to have a 'travel kit'. When you break your bike down to travel, lay out the tools you used and make sure that

you remember take them with you. And don't forget to pack your pedals.

KEEP IT FRIENDLY

So you've made your purchases and your multi-tool is now firmly relegated to your saddle-pack, but don't cut ties with your IDB completely. It's always a good idea to maintain a decent relationship with them even if you're no longer going in to have a puncture fixed or bar tape replaced. They can be great places to pick up maintenance tips and tricks, and if you're unsure of some of the bigger jobs, they can be a real help. Just remember to keep buying the parts you need from them directly, as taking your half-built bike and mail-order spares in for them to put together is a surefire way to ruin a beautiful relationship. As you'll now know, bike tools aren't cheap and on the plus side you'll find purchasing major parts from them tends to speed up fitting time. 

TOOLS YOU CAN TRUST

KIT: Only bad workers blame their tools – with these pre-packaged kits, you'll have no excuses

PRO PROFESIONAL

Torx and allen keys vie for space alongside an 11-speed compatible chain tool (complete with replacement pin), cone spanners, cable cutters and BB tools. A full house then, even if the quality isn't quite 'pro', just very good.

BUY: PRO Professional, £200, madison.co.uk



BIRZMAN TRAVEL TOOLBOX

Our issue three group test winner offers ergonomic tools just a shade below pro quality at a fraction of pro prices – perfect for the occasional home mechanic. There's even a chain wear indicator. Two thumbs up.

BUY: Birzman Travel, £170, i-ride.co.uk



LEZYNE PORT-A-SHOP

A mini-tool case that packs a surprising punch, the Port-A-Shop is perfect for taking to events for race day adjustments. It lacks things like cassette tools, but as a starter kit or something to take on holiday, it's great.

BUY: Port-A-Shop, £100, upgradebikes.co.uk





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Double Olympic track champ and Team Sky hero Geraint Thomas tells us about swapping Wales for Monaco and the importance of pizza on tour

FORCE

WORDS **MARK BAILEY**

PHOTOGRAPHY **DUNCAN ELLIOTT**

Team Sky cyclist Geraint Thomas is no stranger to suffering. The 29-year-old Welshman powered to two Olympic gold medals in 2008 and 2012 in the notoriously gritty team pursuit event – a race in which synchronised four-man teams compete over a 4km track circuit at an intensity so brutal, their brains become starved of oxygen and black dots drift before their eyes. Thomas has also battled to courageous personal victories on the road in the five-stage Tour of Bavaria in 2011 and 2014, the Commonwealth Games road race in rain-soaked Glasgow in 2014, and the E3 Harelbeke one-day race over the punchy climbs and bone-jarring cobbles of Flanders earlier this year. Most famously, as a loyal servant at Team Sky, he endured a torturous physical ordeal to help fellow Brit Chris Froome win the 2013 Tour de France, heroically riding over 3,000km with a fractured pelvis after crashing on the first stage. The pain was so intense, he had to be lifted on and off his bike by Team Sky staff.

Yet ask Thomas to recall one of his most traumatic memories in cycling and he digs up the boozy evening of 25 May 2005 when, as a member of the British Cycling academy – a kind of Hogwarts for gifted cyclists – he decided to break free from the routine of training to celebrate his 19th birthday. At the time, he was living in Manchester with other fresh-faced cycling hopefuls including sprint king to-be Mark Cavendish and his future Olympic team pursuit companion Ed Clancy.

‘We went out to watch Liverpool play in the Champions League final [against AC Milan] but because it went to penalties, it ended up being a later and more drunken night than we anticipated,’ confesses Thomas. ‘Rod Ellingworth [academy manager at the time and current head of performance operations at Team Sky] found out and I got called in for a big meeting with Dave Brailsford [then head of British Cycling and now team

principal at Team Sky] and Shane Sutton [Great Britain track coach]. I got torn to shreds. They gave me the worst possible punishment by banning me from the Five Valleys race in South Wales, on my home turf. I was absolutely gutted. It really hurt.’

Worse was to come. ‘Not only were we not allowed to race, but we were sent off training with Bradley Wiggins and Steve Cummings instead,’ recalls Thomas, still distraught at the memory of being beasted by two senior pros. ‘That was our punishment: six hours in the Peaks with those two.’

EARNING A CRUST

It says a lot about the fiery patriotism and boyish enthusiasm of Geraint Thomas that such a memory still needles him. As a proud Welshman and an attacking cyclist always eager to, as he puts it, ‘smash it’ during races, the Cardiff-born star hated missing out on the chance of a dust-up in the local hills and valleys on which he had honed his craft. But punishments were an important part of the British Cycling development system, injecting the discipline and focus that would turn talented individuals into accomplished professionals.

It was especially important in a house full of lads whose antics included drawing oversized horse appendages on the window, creeping out for sly beers, and racing each other up fire escapes. ‘The academy set me up for being a professional,’ says Thomas, who is known simply as ‘G’ to his fellow riders. ‘You learn not just about racing but also

how to look after yourself.’

A university experience for cyclists, then? ‘More regimented,’ chuckles Thomas. He describes five-hour bike rides, training ‘homework’ and healthy salads. ‘I think uni students just go out on the lash and then put something in the microwave. We couldn’t do that. And I’m pretty sure they don’t have Rod Ellingworth sitting on the kerb outside their house making sure they’re in bed by 10pm.’

**‘IF I HAD TO
LIVE LIKE
A MONK
FOREVER AND
ONLY EAT RICE
AND SALMON,
I’D CRACK’**





Thomas has come a long way since his roguish teenage years. A key member of Team Sky's nine-man Tour de France squad, he now lives in glamorous Monaco, close to his team-mates Chris Froome and Richie Porte. 'It's a great place to live and the roads are really good for training. The team has set things up for us with a permanent 'swanny' [soigneur] for massages, spares for your bike and nutrition products. We are well-supported.'

Thomas is, in many ways, the antithesis of the sterile, monkish culture of modern professional cycling. He has always combined a ferocious work ethic and an intense commitment to the cause with a refreshingly easy-going demeanour. He normally sticks to the rules, munching on salmon and rice while his partner, Sara, tucks into a pizza. But he admits that he enjoys the odd curry, a few beers or a pile of Welsh cakes. He still loves to go on the odd blow-out with friends, too.

'I break the season up into blocks, so I was on the regime until Paris-Nice and the Classics, then I took a little break and enjoyed a steak, a pizza and a few drinks. After that I knuckled down for the Tour. If I had to live like a monk 24/7 I would just crack.'

Thomas's earliest memories of cycling are from his rides with the Maindy Flyers cycling club in South Wales. 'I remember getting nervous about doing a two-lap dash, even though there were only five of us,' he says. 'My first race bike was a blue Giant but my very first bike was a Wolf mountain bike. It had buttons you could press that made noises.'

As a young rider he would compete with Team Sky companions Luke Rowe and Ben Swift. 'We'd travel away to races at weekends, going off in a minibus with a boom box. Sometimes we'd camp or stay in hostels. Good friends and a good laugh. I loved it.'

He dabbled in other sports but cycling was destined to be the winner. 'I joined a swimming club in Cardiff but they wanted me to start training before school in the mornings so that was the end of that. I'm not a morning person. So I just concentrated on cycling. I played football and rugby too, but when I was about 14 everyone started growing so those sports soon fizzled out as well.' 🇨🇦

Margherita time – Thomas dreams of his next stuffed crust; right: Team Pursuit final, London 2012, and riding the Tour in 2007



Photos: Alamy

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Thomas dabbled in other sports but cycling was destined to be the winner

Thomas attended Whitchurch High School, the same school as Real Madrid's £80million footballer Gareth Bale and Wales rugby captain Sam Warburton. 'It's a small country and we have a lot of national pride so it's good to see other Welshmen and women doing well.'

He's convinced that honing his talents on the undulating roads of rural Wales has contributed to his enjoyment of the bumpy one-day classics like Paris-Roubaix and the Tour of Flanders. 'When you're riding around South Wales the roads are pretty hard going with all the lanes and valleys. It's similar weather to Belgium and places like that too.'

It was Thomas's victory at Junior Paris-Roubaix in 2004 that made him realise cycling could be a

'THE TOUR DE FRANCE IS SO TIRING, YOU HAVE TO SIT DOWN TO PEE'

potential career path. 'I won Paris-Roubaix, took second in the points race at the European Juniors, then won the world scratch race [all in 2004], so I started thinking, "I could actually turn pro here and make a living out of it." But until that point, I just enjoyed racing my bike and travelling about with friends. When I was 16, I got a ride at the Junior Worlds and British Cycling said they wanted me on the academy programme.'

DRAGON RIDER

In his book, *Project Rainbow*, Rod Ellingworth says of the young Geraint Thomas, 'I remember looking at him and thinking, "Bloody hell, he looks good as a pursuer." We all knew this guy was a real talent.'

But Thomas's rapid progress was halted in 2005 when he suffered a horrific accident on a British Cycling training camp in Australia, which left him with a ruptured spleen. 'That was pretty scary, especially when the doctor came in and told me that my spleen was bleeding and if it carried on bleeding, I would die. He actually said that to me. So I was a bit like, well, what are you going to do then? They said it had stopped but they would monitor me. I was asleep in the hospital when at about 3 or 4am they woke me up and took me straight to surgery to take it out. My mum, dad and brother flew out to look after me. It wasn't the best time, I guess. But I was back on my bike six weeks later.' Thomas tells anyone who asks about his scar that a shark bit him.

Throughout the 2006 season, Thomas raced in Italy with his team-mates from the British Cycling academy. 'Back then, British riders weren't that well known so we were just seen as the whoppers of the peloton,' he says. 'We would struggle to get into races. The other riders just saw us as the rubbish filling up the numbers. They thought we shouldn't be there. But that's certainly changed now.'

Ellingworth can recall Thomas being abused by some Italian riders. 'They were all shouting at him, "Inglese!" Geraint just said to me, "F***ing w****s, I'm not even English. I'm Welsh."'

Thomas is a flinty competitor. Ellingworth recalls his enthusiastic reaction to a ruthless tactic he playfully suggested to help Mark Cavendish defeat ➔

G'S BIKE

Thomas's ride gives him the response, speed and lightness he needs

PINARELLO DOGMA F8

Designed in conjunction with the car manufacturer Jaguar, the latest model of the iconic Pinarello Dogma is apparently 26.1% more aerodynamic than the previous Dogma 65.1, 120g lighter and 12% stiffer. 'I really like the F8 because it's more responsive and quicker than before,' says Thomas. 'I've done a lot of wind tunnel testing and it's a really impressive bike. It's very light, too – right on the limit of the regulations of how light a bike can be. That combination of quality and weight is what makes it special.'





Thomas is looking forward to 'smashing' this year's Tour de France in July

HOW TO RIDE LIKE A PRO

Geraint Thomas reveals his five winning tips



GET GEEKY

'At school, I was always interested in biology, the body, physiology and how it all works – and that really helps in cycling. If you understand why you're doing a particular training session, you're more likely to commit to it. Read up on things and try to understand what is happening to your body when you cycle. You don't want to be out there flogging away, wondering why you're training in the cold and rain.'



HIT THE TRACK

'There is a good reason why so many riders start out on the track. It helps your pedalling technique so you can ride nice and smooth but the main benefits are the speed and the high cadence. After a few track sessions you will notice your top-end speed over 500m really improves and you will start spinning more when you're on the climbs, which helps save energy. It's good for bike-handling skills too, so you can get around the bunch when you're riding in groups.'



ADAPT YOUR FOOD INTAKE

'On a big training day I will eat a lot of food, but if I'm doing a recovery day I won't eat as much because I don't need it. That helps manage your weight. My favourite meal from our chef at Team Sky is smoked salmon or sushi. His guacamole is awesome too. Occasionally he dishes out some pizza. It feels like it's your birthday and really lifts your spirits.'



POWER UP FOR CLIMBS

'The best way to train for climbs is to get out and ride the hills as much as possible. Threshold power sessions are pretty good, when you just maintain a high effort for a set amount of time. Results don't happen overnight but the improvements will come pretty quickly. If you only have a three-minute climb near you, just ride up it 4-5 times and recreate the sensation of a long climb.'



CONTROL YOUR DESCENTS

'The main thing is to stop braking before you start cornering. If you start yanking on the anchors during a bend, your wheels might slip and you end up coming off. Scrub all your speed off before you hit the corner, then cut the apex, look for the exit early, and carry as much speed out of the corner as you can.'

Australian rival Ben Kersten in the scratch race at the 2006 Commonwealth Games. 'I went to discuss tactics with the lads and said, with a dead straight face, "We think the best way to go about winning this scratch race is to take this guy out... Hands up, who's up for it?" It was Thomas who raised his hand.'

But this killer instinct was driving Thomas to greatness. He went on to sample his first Tour de France in 2007 at the age of 21, with the Barloworld team, becoming the first Welshman to compete there since Colin Lewis in 1967. He finished 140th out of 141 riders in what proved to be a baptism of fire. 'I had only been a pro for six months and it was all new to me,' he says. 'The speed of the Tour is crazy. I remember having a couple of gels with 30km to go and the next thing I knew I was 5km from the finish, thinking, where did that go? Every day I woke up and thought I'd never get through the stage. You're so tired, you have to sit down to pee. But it was a great feeling to make it to Paris.'

STEPPING OUT OF THE SHADOWS

Thomas has grown in stature every year. Between 2007 and 2012, he won three team pursuit world titles. In 2008, he earned his first Olympic gold medal, also in the team pursuit. In 2010, he joined the newly formed Team Sky and triumphed in the national road race championships. The following year he claimed victory at the Tour of Bavaria, helping Mark Cavendish win the world road race championships. At London 2012, he returned to the track to take his second gold medal in the team pursuit before returning to the road and completing his epic injury-defying performance at the 2013 Tour.

'I remember when I crashed on the first stage, I got back on and I was in excruciating pain,' he recalls. 'I had one dead leg and I couldn't pedal with my right leg.'

The next morning it was just as bad. Somehow, I made it through the day – I have no idea how because at every roundabout, I was dropped by the peloton. It was a really long day of suffering. I then had a CT scan and they saw the fracture. The doctor said it wouldn't get worse but that I'd have to manage the pain. I got through the first week and then just kept going. But it was worth it for that final week when I could get stuck in and be a part of the team that won the Tour with Froomey.'

Although Thomas's role is often to help his team-mates succeed by chasing down attacks and pacing his team leader up mountains, winning the Commonwealth Games road race last summer was a personal highlight to treasure. 'The Commy Games was a massive one for me because I hardly ever get to race for Wales. I didn't expect to win as I'd had a long month on the road at the Tour. The terrible weather added to the excitement – as did the puncture I got late on. It was a special day.'

Buoyed by his victory and a 22nd place finish in the 2014 Tour – his highest ever – Thomas has made even more progress this year, triumphing in the Volta ao Algarve stage race and E3 Harelbeke. 'Winning in the Algarve was definitely a surprise because Richie [Porte] was in the lead and I was the back-up who was supposed to take the chance if it came up. I won the second stage and managed to keep the jersey. But I love the Classics most. I've had

some top-10 finishes in Paris-Roubaix and the Tour of Flanders, and I'd love to win one soon.'

Faster and fitter than ever, bubbling with confidence, and gloriously injury-free, Thomas is now ready to tear up the 2015 Tour de France. 'The Tour is pretty simple,' says Thomas. 'You smash it, recover, then do it all again.'  Geraint Thomas is an ambassador for protectyourbubble.com bike and gadget insurance

'MY CRASH LEFT ME WITH ONE DEAD LEG AND ANOTHER I COULDN'T PEDAL WITH'

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Supplementary BENEFITS

The public face of sports nutrition seems to be dayglo drinks, sugary flapjacks and glutinous gels. But do they really deliver on race day, and is there a natural alternative?

Sports supplements: endorsed by pro teams, bigged up by advertisers and normalised by high street availability. But what exactly do they bring to the table for endurance cyclists? If the impact of these 'performance enhancers' were *that* significant, then surely the World Anti-Doping Agency (WADA) would put their names down on the no-entry list? And yet the market for pre-race stimulants, in-the-saddle-boosters and post-ride recovery aids remains an ongoing, growing, multimillion-pound one.

So how exactly do the lab-produced potions and powders boost our performance – and what does Mother Nature offer as a less contrived and, let's face it, less expensive alternative? *BikesEtc* asked Dr Chris Easton, senior lecturer in exercise physiology at the University of the West of Scotland, and elite performance nutritionist and NZ Olympic Cycling Team advisor Glenn Kearney to give us the lowdown on the legal highs...

WORDS **ROB KEMP**





HIGH-INTENSITY

Muscle burn extinguishers

Cyclists first discovered the wonders of sodium bicarbonate as a sports supplement for high-intensity performance back in the 1930s, using it to reduce the effect of metabolic acids on muscle fatigue. Back then, sun lamps, powdered asses' hooves and strychnine mixed with brandy were also used to improve cycling performance – thankfully, baking soda proved to be the best pain-reducing potion. No wonder cyclists like cake so much.

'Sodium bicarbonate and sodium citrate are alkaline substances that buffer the hydrogen ions [acid] produced during high-intensity exercise,' explains Easton, more scientifically. 'Given that muscles don't contract so well when they're in an acidic environment, sodium bicarbonate/citrate can improve performance by reducing the acidity in

the muscle cells.' Nottingham Trent University research highlights marked performance levels among cyclists using sodium bicarbonate – though some dropped out with gastro-intestinal issues.

More recently, creatine has come to the fore as a muscle recovery lubricant. Although it's cast as the go-to gain product for giants of the gym weight room, a number of studies – including those from the University of Oklahoma – suggest that creatine supplements can increase pedal power without major weight gain. 'It's different to the sodium bicarbonate in that it also exerts a physiological effect on performance as well as recovery,' says Easton. 'Creatine adds energy to muscle stores that can be drawn upon quickly to power a breakaway or sprint finish.'

In the '30s, powdered asses' hooves were said to up cycling performance



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OXYGEN DELIVERY

Power boosters

Vegetable extracts and nutrient-based supps that crank up the nitric oxide levels in the body are featuring more and more in the diets of long-haul riders. 'Nitric oxide is vitally important in the normal function of the body – it's key to controlling the relaxation of blood vessels to reduce blood pressure,' says Easton. Its concentration into beetroot juice or nitrate gels make it a handy cycling aid. 'Vegetables will have different amounts of nitrate depending on what soil they're grown in – using the gels or concentrated juices means we're delivering a known quantity of nitrate.' Easton has measured these in his lab so he's confident.

When it comes to exercise, nitric oxide has the potential to boost blood flow to the working muscles, expanding them in the process. 'We think nitric oxide also plays a role in the energy metabolism processes of the muscle during exercise – making the athlete more efficient – as they use less oxygen and energy to do the same amount of work.' The performance boost achieved with nitric oxide is small though – in the region of 1-3%. 'But for many cyclists, that's enough – our work has shown that it may be particularly important when the exercise takes place at altitude,' adds Easton.

Beetroot juice makes a handy biking aid



Beet It Sport Pro-Elite Shot (£1.59, beatthebonk.co.uk)

NATURE'S ALTERNATIVE

'Green leafy vegetables like spinach, beetroot and Swiss chard have high amounts of nitrate which, when we eat them, is converted first to nitrite, and then to nitric oxide,' explains Easton.



MIND AND BODY

Stimulators

The likes of caffeine, ephedrine, and taurine have become common ingredients in the make-up of booster bars, gels and drinks to increase alertness. Caffeine and ephedrine are stimulants – the latter now among the many prohibited by the World Anti-Doping Agency (WADA). Caffeine has in the past been banned, then its use limited, but is currently off the WADA list (though still closely monitored).

‘There is good evidence that caffeine can be beneficial for short term endurance exercise,’ says Easton. ‘It’s likely that the benefits stem from an increase in fat metabolism – sparing the stores of muscle carbohydrate which means they are available later in the race.’ As a result, whether it’s within a gel or an espresso cup, caffeine is an established perk of the peloton. ‘It raises alertness and

provides a kick – especially when married up with carbs in a quick-to-digest format,’ says Kearney.

‘As with sodium bicarbonate, some cyclists report gastrointestinal problems with stronger caffeine products – though you’re more likely to suffer these if you’re dehydrated,’ says Kearney. ‘Take a mouthful of water with a caffeine-based booster.’

Taurine, the ‘wings’ in energy drinks such as Red Bull, is sold as a pep-up for flagging runners, riders and all-night ravers. While the key stimulant is still caffeine, taurine is thought to play a role in the function of skeletal muscle. ‘Science is not exactly sure of the mechanism by which it is implicated in exercise performance, and there’s nothing that’s convinced me of taurine’s benefit to an athlete – not just yet, anyway,’ says Kearney.

Caffeine provides a kick, especially when married up with carbs

SiS GO Gel + Caffeine
(£9.89 for 6, scienceinsport.com)



NATURE'S ALTERNATIVE

‘Taurine is an amino acid [building block of protein] that we get naturally in our diet from fish and meat,’ says Easton. Hot tea contains around a third of the caffeine of a regular filter coffee.



FLUID

Forces

Hypotonic fluids – such as plain water – may have worked wonders for the Tour riders of a bygone era, but these days, it’s all about the intake of sodium in the form of electrolytes if you want to replace sweat with essential cramp-cutting power juice.

While there’s an argument that electrolytes provide a superior level of rehydration, Easton suggests that it’s all about the timing of their taking.

‘Human beings are actually quite sturdy,’ he insists. ‘We’re capable of losing reasonable amounts of both fluid and electrolytes before it begins to have negative physiological effects. I’d say the addition of carbohydrate and electrolytes is important for exercise lasting more than 75 minutes.’

During exercise, we lose water and electrolytes (principally sodium but also potassium). Simply replacing these minerals with water during a long hot ride can ‘dilute’ the remaining electrolytes in the body – triggering reactions including cramp. Maintaining a steady 500-750ml intake of fluid mix every hour after the 75-minute mark in a long ride can combat this. That’s an English Institute of Sport guideline though – when it comes to intake, it really is a case of horses for courses. There is a risk that some riders will overdrink in the belief that they must replace everything that they lose – in severe cases, this can actually lead to hyponatremia (low sodium) which is water intoxication.

Humans are capable of losing a lot of fluid before negative effects take hold

High5 Zero Electrolyte Drink Tablets
(from £6.99, highfive.co.uk)



NATURE'S ALTERNATIVE

The underlying component to electrolyte drinks is sodium, or salt. Most veggies contain trace amount though some beans such as mung and garbanzo beans have relatively high sodium content. Although when riding, try going old-school with your nutrition and wrap some salted boiled potatoes in tinfoil and eat a couple every hour or so.



ENERGY Elevators

Short-chain carbohydrates in a rapidly digestible format have been shown to provide the ideal glycogen (energy sugar) replacement when stores run low. While being very effective, they're not to every rider's taste, not least of all because of the after effects on the digestive system should you take more than your gut is able to handle.

Often it's about finding the right mix of ingredients – a glucose-fructose mix as opposed to a solely glucose one, and a concentration you can cope with. 'Getting the right concentration also depends on the type of event, the intensity of the exercise and the individual athlete,' says Easton.

For rides of up to two hours, he suggests 30g per hour of carb bar, gel or snack (1/4 of a 150g pack of Bassett's Jelly Babies). 'In the case of drinks, this could be either glucose or a glucose/fructose mix.' For longer events, the ingestion rate should be increased to around 60g per hour. 'For three or more hours, it may be possible to increase ingestion rate to 80/90g per hour if using a glucose/fructose mix.'

Easton advises that this will require the athlete to do some nutritional training, where they practise their nutritional strategy before the event. 'Actually ingesting that amount of carbohydrate while exercising is an additional challenge though,' he says.

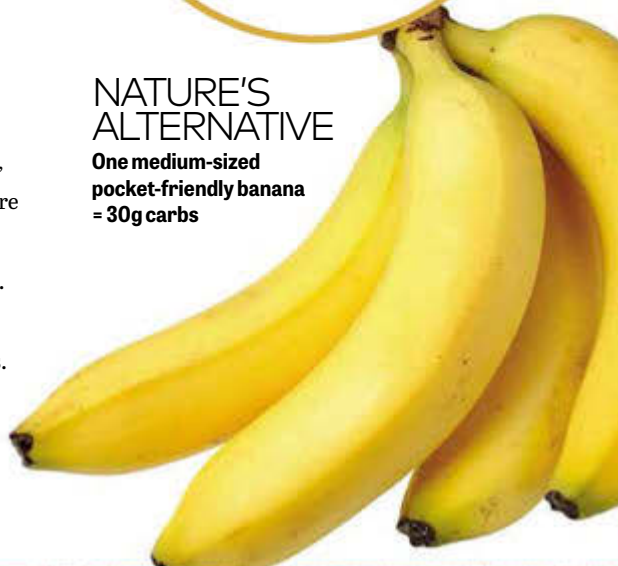
Pack Jelly Babies if you're taking a two-hour ride



CNP Hydro Gel (£2, cnpprofessional.co.uk)

NATURE'S ALTERNATIVE

One medium-sized
pocket-friendly banana
= 30g carbs



DIET Compensators

Multivitamin boosters and mineral tablets are always a powdered bone of contention in the nutritional world. Some argue they're essential to all-round health and provide endurance athletes especially a boost of immunity protection – others deny their worth if you're getting a balanced diet anyway. Dr Easton is in the latter camp. 'We should get everything we need from a healthy diet,' he says. 'It shouldn't be necessary to supplement with additional vitamins.'

There are some specialised problems that elite athletes suffer that can require additional vitamins – particularly females. 'Iron deficiency in female endurance athletes is reasonably common and can have a negative impact on endurance performance in the form of anaemia, but again, I would advise that vitamins are only necessary above and beyond the diet when one is deficient.'

Kearney, however, believes mineral-based supplements play a crucial role in attaining peak performance levels. 'Magnesium especially is a much underrated nutrient that can and does

aid cyclists in several way. Research, including some studies we did from London 2012, showed that many athletes are deficient in key nutrients like magnesium, within their diet.'

While the effects of low iron and calcium levels have long been recognised, magnesium deficiency receives less focus but remains as crucial, argues Kearney. Low dietary magnesium is believed to cause a partial uncoupling of the respiratory chain – increasing the amount of oxygen an athlete needs to maintain ATP (energy creating cells) production.

There is also evidence that a magnesium shortfall boosts the energy cost, and hence oxygen use. 'Supplementing with magnesium has been shown to improve energy production as well as improve muscle and tissue recovery,' says Kearney. Also, water-soluble B vitamins (thiamine, riboflavin, vitamin B-6) perform a series of energy-boosting functions in the athlete's body including cell repair – but by their nature are too easily flushed away. 'Supplementing these keeps the body at optimum levels.'



ETIXX Magnesium +
Absorption Tablets (£6.69,
hollandandbarrett.com)

NATURE'S ALTERNATIVE

Sunflower seeds, cocoa powder, bran,
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Even an athlete's diet can be
deficient in key nutrients



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SKILLS, TIPS AND FIXES TO UPGRADE YOUR PERFORMANCE



GOING DOWN?

Here's how to increase speed without sacrificing safety on every single descent

At the 2011 Tour de France, sprinter Thor Hushovd surprised many by defying several hilly stages to remain in yellow for a week, his race peaking on the 152km stage 13 from Pau to Lourdes. The man known as the God of Thunder overtook the day's leader, Jérémy Roy, with 2km to go to win the stage, clocking 111kmh on the descent of the Col d'Aubisque.

Now, we're not saying you should be slipstreaming Hushovd's efforts, but improving your descending skills is free speed. And in a sport where bikes cost 

thousands, that's fiscally and physically prudent. But where do you start?

'A balanced position on the bike is vital,' says bike fitter John Dennis. 'This means you haven't loaded your weight over the front or rear. In turn, this should also lead you into a nice, sustainable position on the drops.'

This is key. Not only does nestling into your drops improve your aerodynamic profile – vital when you consider the body is responsible for up to 80% of drag on a bike – it also gives you greater control.

'The wider hand position improves your handling, which is vital at high speeds in case of emergencies such as a rider cutting across you,' explains British Cycling level-three coach Pav Bryan. 'You can use the hoods if you prefer but the narrower the grip, the less control, so definitely don't grip the tops.'

Your elbows should naturally tuck into your sides, lowering your chin toward the bar. For many cyclists, who spend their entire time on the hoods, this may feel unnatural at first, but don't let that tense you up. Speed and safety derive from a Zen-like approach.

'It might fight your natural instinct, but relax,' says Bryan. 'Tightness affects your entire body through to gripping the bars like a vice, which hampers control and can lead to accidents.'

Relaxing at speeds in excess of 60kmh is built through practice – which is where joining a club pays off. More experienced riders will be able to guide you on all the hills in the area and give you a line to follow. Choose a shallower hill to begin with, riding it once – ideally twice – a week for a couple of weeks. Then find

The larger the cyclist, the greater the downhill force – time to pig out on pork scratchings for more speed



a steeper hill and do the same, before your confidence grows and descending becomes second nature. If you don't fancy joining a club, Google Maps is a useful tool for seeking out potential hills to practise on.

Of course, there are further on-the-fly techniques that keep you relaxed, such as looking forward at where you want to ride – not down or around. You should sight 50-100m in front of you. Not only will this help you spot any potholes before they spot you, your body will tend to follow your eyes. 'You'll also feel more relaxed if you keep your pedals level,' adds Bryan. 'It improves your sense of balance at speed.'

ROUND THE BEND

Though uncommon in the UK, cornering at significant speeds is vital at hairpin-packed European sportives. Ideally, enter wide and cut the apex, keeping low down on the drops, though moving your weight to the outside pedal, dropping it to the 6 o'clock position for greater control.

'And if you can't see round the corner, just make sure you feather the brakes before the corner,' says Bryan. 'If you

start to lock up, release and reapply. If you really overcook it, rear brake only so it doesn't disturb your turning.'

If you're riding a hilly sportive, it's useful to recce the course or examine the course profile. Armed with the distance and gradient of the steepest hill, you can then find a similar slope near you to practise on beforehand.

If you do have the misfortune to crash, the simple answer is to ignore the nerves and get back in the saddle. Sadly, the mind doesn't always work like that. 'Going out with a stronger rider and following them downhill – a few bike lengths apart – helps to rebuild confidence,' says cyclist and sports psychologist Dr Vic Thompson. 'Get them to back off to begin with, before going gradually quicker. You'll soon wring more out of each hill and return to form.'

Like all rides, ensure your gear is in good working order – especially the brakes – and avoid loose-fitting clothing as the flapping and noise is distracting. One final plus of descending comes from physics and lard. Since the larger cyclist has a greater mass, gravity results in a greater force than on a smaller cyclist. Which means one thing – time to pig out on pork scratchings for more speed. 🐷

TOP FIVE DESCENDING TIPS

A FEW TECHNIQUE POINTERS FOR WHEN THE ROAD GOES DOWN

1

Looking 50-100m ahead guides your body and bike to where you want to go.

2

Grip the drops lightly, with elbows tucked in and chin toward the handlebars.

3

Keep your pedals level to improve balance.

4

Relaxation is key – tension distorts handling and increases chances of crashing.

5

If you need to brake into a corner, always feather them before you enter. Don't wait until during.

UK'S steepest descents

Fire up that adrenaline with five of the country's most terrifying gradients

HARDKNOTT PASS, CUMBRIA

Originally built in the second century by the Romans, this road descends 298m in just 2.25km. The average gradient of 13% increases to a buttock-clenching **33%** in places. Arguably the scariest in the UK.

ASTERTON BANK, SHROPSHIRE

This beast sits on the eastern side of the Long Mynd, a heath and moorland plateau that forms part of the Shropshire Hills. Over 960m, you drop 163m and, according to Strava, average 17% gradient with a max of **25%**.

YORK'S HILL, KENT

York's Hill is home to the world's oldest bike race, the Catford Hill Climb, which first took place back in 1887. Tiring on ascent, it's lightning-fast on the descent, plummeting 74m in just 600m for an average gradient of 13% and a max of **25%**.

FFORDD PENLLECH, HARLECH

Officially the steepest road in the UK, it's only 300m long but in that time, reaches 51m toward the Welsh gods, giving it an average gradient of 20% and a maximum of **40%**. It's one-way only – downhill – and is officially off-limits to cyclists... Though Strava testifies otherwise!

PORLOCK HILL, SOMERSET

The A39 into the pretty village of Porlock is an exhilarating test, coming in at around 12% average and maxing out at **25%**. Note: so steep is the descent that one BikesEtc writer's brakes gave out on his £80 Volvo back in 2003. It was sold soon after.





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RIDE. FIGHT. WIN.

ORBEA COFIDIS REPLICA

Orbea celebrates its 175th anniversary in 2015 with the enthusiasm that has always characterized the company. The association with Team Cofidis is one of the milestones achieved this year and it is an exciting project for the future. Team Cofidis is a premier team that will compete in the biggest events in the international pelotón, with racers and equipment that have won the respect of the World Tour.

Working in association with Team Cofidis we are developing products for the specific demands of the mountain stages with Dani Navarro and Luis Ángel Maté, and for the sprints with Nacer Bouhanni.

Discover the four Orbea Cofidis Replica models on orbea.com

© Graham Watson

175TH ORBEA

WASH WITH CARE

Whether you wear bargain bibshorts or pro team jerseys, a bit of attention when washing your kit will pay off



Looking after your cycling kit comes pretty low on most riders' to do lists, which is foolhardy when you consider wearing some premium brands can mean pedalling away in almost a grand's worth of kit. Thankfully, help is at hand, in the form of Ian Brown, brand manager for Scottish manufacturer Endura, which provides kit to the Movistar team. 'This might surprise some but riders should wash their cycle clothing more,' he explains. 'Washing a cycling jacket, for instance, is important because the sweat, oil and dirt clogs up the technical fabrics, restricting their waterproof and breathable qualities.'

And Brown's not talking a Victorian hand wash followed by a quick dry in the mangle. Even today's lightweight, synthetics, such as Lycra, nylon and polyester, can handle a washing machine. And that goes for every item in your cycling wardrobe, from that mesh base layer to your chamois-packed winter bibtights – but leave your hands off the Daz.

ADDITIVE FREE

'Key is that you use the right detergent,' Brown advises. 'They must be non-biological and as free from perfumes, softeners and other additives as possible. Again, that's because they prevent technical fabrics from working properly, as well as

tampering with their stretching properties.'

Endura recommends soap flakes, but any of the detergents listed below will suffice. No matter how dirty you've managed to get your kit, never wash it on any setting over 30°C (the wool cycle) and on a low spin. You should also wash cycling apparel separately, not mixing with interlopers like denim jeans. 'It's to ensure your kit is not damaged by heavyweight zips, buttons or Velcro,' says Brown. Fastenings on cycle clothing can cause damage too, so ensure every zip on jackets and jerseys is done up.

In fact, so sensitive are some synthetic items to a bit of rough and tumble that investing in a pack of mesh washing bags is a wise idea. Some kit, especially top-end apparel, comes with but a quick search online or in supermarkets or Lakeland should turn some up.

It's wise to apply a durable water repellency (DWR) product too. Most manufacturers treat their waterproof garments with a water-repellent elastomer as a final flourish. Over time, this can wear off. A sure sign is if rain soaks into, rather than beads off, your jacket.

'Products from Nikwax are good,' recommends Brown, 'as are Granger's, who have a line that washes and waterproofs in one.'

AVOID A TUMBLE

Some DWR products require a second cycle on low and then either air dry or, if you're confident in the quality of your tumble dryer, a quick tumble at low heat. However, be warned, says Brown. 'The range of temperatures varies between tumble-dryer manufacturers so, even though cycle clothing might be fine on a low dry, it's too much of a lottery to make that a standard for all.'

Too much heat and any reflective decals will peel off and seams could fray, so we'd recommend no tumble dryers or hot radiators, only air-drying on a hanger or clothesline. 'You'll find they dry quickly anyway,' says Brown, 'as the clothes are designed to wick moisture away from the body and to the open air.'

'Key is using the right detergent – soap flakes are best'

Alternatively, there are spray-on waterproofing treatments, which you can apply to the clean, damp garment. Either way, the

general rule is that you should add a DWR product to waterproof clothing every 10 washes.

Now you're ready to ride, but hold on – there's one final word from Brown. 'You should wash your bibshorts between every ride. That can be a pain for commuters so, if money allows, buy a couple of pairs. Fail to keep the chamois pad clean and bacteria will build up leaving you with saddle sores. And no one wants those.'

Fixie skills

RAPHA'S GARMENT GURU, HAMISH JENKINSON TALKS US THROUGH THEIR FREE CLOTHING REPAIR SERVICE

What are the most common repairs?

Seventy per cent of repairs are for crash damage, most of which are the shoulder, sleeve and hip areas. The other 30% of repairs are from wear and tear.

Talk us through the repair process...

I examine the garment and then source the same fabric for patching. Some repairs are just re-stitching jobs but others require more material. I then patch the damaged area following the seams and shape of the garment. We'll then return it to its owner.

Are there any specific problems you encounter in repairs because of the high-tech materials Rapha works with?

We avoid repairing items such as merino base layers because the fabric is too delicate to perform a durable repair. Also, we can't repair zips because there are too many variations and sizes to keep in stock, and it almost always involves taking out seams that can't be re-stitched. Flatlock stitching is necessary for repairing Lycra bibshorts and to create a durable patch under a lot of tension!

Sounds like a complex process. How long should a cyclist expect to wait for the repaired garment?

Some garments can take up to four weeks – it depends on how long it takes us to source the fabric – but in most cases you're looking at two to three weeks. Also, it's free apart from the postage to send it back to us.

WASH AND GO, GO, GO

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NIKWAX BASEWASH
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HALO PROACTIVE SPORTS WASH COMPACT
Anti-fungal, anti-bacterial and anti-viral at 30°C, you'll get 12 washes out of this 250ml bottle.
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halononbio.co.uk



THE LONG ROAD

It may feel like your legs are doing all the work but as your rides get longer, you'll soon find the rest of your body has its fair share of cycling-related aches and pains

Your legs are your pistons, and over the course of a three-hour ride they can knock out upwards of 12,000 pedal revolutions. While it's to be expected that this can leave your lower limbs sore and momentarily praying for a new, sedentary owner, cycling is a democratic pastime and shares the aches and pains around your body.

'One of the greatest non-leg-related problems I see is lower-back pain,' says physiotherapist and bike-fitter Paul Savage, 'and commonly that stems from a poor bike fit.'

While a professional bike fit is ideal, they can be expensive, and there are several self-prescriptive actions you can take first.

'To start with, I'd flip the stem over which will raise the handlebars by about 10 degrees,' advises Savage. You can further raise the bars by adding spacers beneath the stem. 'And you can buy a shorter stem,' he adds. 'All of this will reduce the stretch. For individuals new to regular road cycling, as distance increases, it's key that you become higher at the front end and less stretched.'

Greater comfort and reducing back pain also derive from correct hand position. The drops are great for descending, battling headwinds and sportive finishes, but the hoods or tops will ease you into a far more comfortable and sustainable

position. Don't fall into the trap of thinking the drops are a badge of honour. Even the pros might nestle on the drops for only 10% of a long stage. But whichever position they're in, they treat the bars with reverence.

LOOSE GRIP

'How you grip the bars also affects your chances of neck injury,' says Savage. 'If it's too tight, tension fires through your arms and up to your neck. You've got to feel like your weight is 60-70% through the saddle and your arms are just there to steer, nice and relaxed,' he says.

Being too low at the front and cocking your head back to see where you're going can also lead to neck pain, and that double-whammy has had clients of Savage's coming in with their levator scapulae – the muscle that takes the head back – almost in spasm.

'I've also had riders coming in with arm issues, especially around the triceps,' he says. 'Again, this can be down to overstretching but it can also be caused because of a distorted saddle. If the saddle nose is pointing down, you're putting more pressure on your arms – say 50% rather than 30-40%.

Conversely, if your saddle's tipped up, your pelvis leans back, which means you'll overstretch again and bang – lower-back pain. Keeping the saddle level is what you're after.'

In fact, for a sport so dominated by the lower limbs, your torso and upper body can make or break your riding career. Cyclist's palsy, for instance, is a painful nerve injury at the wrist. You'll notice you have it if you find it difficult to perform simple tasks like pinching or operating a keyboard.

'It can be caused by the angle of your handlebars and hoods,' explains Savage. 'If the handlebars are rotated so that the hoods are pointing up, that's going to compress the ulna (under area of wrist), which could cause a nerve palsy. If rotated too far round the other way, it'll compress the radial side (top side of the wrist).'

It's easily avoided by steering your wrist into a neutral position. Just ask a cycling mate to check your hand position, ideally on the safety of a turbo trainer.

Ultimately, as ride distance increases, many common ailments can be alleviated by making sure you have a level saddle, neutral wrists and that your handlebars are the same height as your saddle.

Don't fall into the trap of thinking your drops are a badge of honour – show them respect

ABOVE THE WAIST

Your legs can look after themselves but your upper limbs and torso may need a bit of pre-emptive attention

1

NECK

Standing or sitting with an upright posture, lower your chin towards your chest until you feel a stretch in the muscles at the back of the neck. Hold for 5secs and repeat five times.



2

LOWER BACK

Lie on your stomach and place your elbows under your shoulders with forearms and hands on the floor. Lift hips off the floor, keeping your back straight and abs tight, resting on your toes. Hold for 60secs.



OUT OF THE SADDLE #3

RUNNING

Mix up your training regime by leaving the bike at home



It's the faff that gets you after a while. You've only got a 90-minute window to ride and by the time you've got dressed and pumped up your tyres, it hardly seems worth it.

For many, the solution is to leave the bike behind and go for a run.

Running and cycling make great bedfellows – just look at the Brownlee brothers – but be sure to start slow. The impacts involved in running are guaranteed to leave you suffering with Delayed Onset Muscle Soreness (DOMS), so while your fit cyclist's lungs might be telling you to go faster, take those first runs slow – your legs will thank you the next day (and the day after). If you can start with 20 minutes of continuous easy running, you're doing well. Add a few minutes each run till the DOMS disappears, then start upping the pace.

The big advantage is convenience – you can get a lot of intense cardio work done in just 30 minutes of running, and that will translate easily to the bike. Running also torches calories in ways cycling can only dream of, so if you're trying to shift a couple of kilos, throwing two or three lunchtime runs into your weekly routine is a sound idea.

As you get better, think about trying your local Parkrun, a free, timed (but non-competitive) 5km held in hundreds of parks across the country every Saturday morning at 9am. These community-driven events are welcoming to people of all ages, shapes and sizes, so perfect whatever your level of ability. See parkrun.org.uk to find an event near you.

Illustration: Ben Spurrer

TRAIN YOUR GUT

Feeding your body for long hours in the saddle can take its toll too. BMC Racing's nutritionist Judith Haudum tells us how to fuel for the long miles ahead...

DURATION DICTATES YOUR FEEDING REGIME

If it's a ride under 45 minutes, water only is absolutely fine. Up to two hours, that shifts to ingesting 30g carbohydrates – which is one gel – per hour for low to moderate-intensity riding. That doubles during high-intensity bouts.

THE OPTIMUM IS 90G CARBS PER HOUR

A mix of glucose and fructose fuels your muscles better than glucose alone. Be warned: many of the elites don't reach 90g per hour due to absorption struggles, which can leave you feeling sick. Start with one gel per hour and slowly increase.

ALL GELS AND SPORTS DRINKS ARE DIFFERENT

Try several in training and see which works best for you. And never try anything new on race day – you can always try out the race nutrition sponsor's fuel in training and see how you cope – but the last thing you want is to feel sick on the starting line.



3

WRISTS

Hold a light dumbbell in one hand with your palm up. Curl the weight up toward your body as far as it will go. Return to start. Do 8-10 reps, then flip your arm so your palm is facing down. Repeat. Switch arms.



4

ARMS

Start with your palms resting on a bench or chair, fingers facing forward, and bend your arms, lowering your body as close to the floor as you can before lifting yourself back up. Do as many dips as you can while holding good form.



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POWER NAP

How getting optimum shuteye can boost your riding performance

We take sleep for granted,' explains Nick Littlehales, sleep coach for Team GB cyclists. 'Quality sleep is crucial to energy production and to mental and physical recovery, not just from the exertions of exercise but in healing and returning from injury too.'

It's certainly a crucial factor for cyclists as the nature and demands of endurance events such as the Tour can play havoc with a rider's natural nocturnal recovery time.

Research from the University of Central Queensland highlights how the demands of a week of long rides can compromise sleep quality. The study showed that poor sleep quality leads to a decline in a cyclist's motivation and their physical and mental state during a simulated tour.

A sleep coach will use a series of applications to ready riders and improve recovery – many of which cyclists at all levels can use. Their tips have contributed to better race times and recovery rates for the likes of Team GB and they include creating distinct 'warm-down' and 'gradual rise' periods to the day, as well as learning jetlag-defying habits. Littlehales himself guides riders on how to avoid sleep-disturbing stimulation before bedtime and how to identify whether they're an 'early bird' or 'night owl' when it comes to their best performance time.

NIGHT ROUTINE

Littlehales prescribes light yoga for some cyclists before bed to ensure a restful night and, in turn, a fully energised morning ride. And examines how everything from room

décor to texting in bed can ruin a ride. 'We all need to reduce our exposure to technology and unnatural light in the evening and follow our body's reactions to natural light,' he warns. According to Littlehales, even having the lighting too bright when you're brushing your teeth at night can stop the brain going into sleep mode.

Other strategies to improve your quality of kip include setting the bedroom temperature to an optimum 16-18°C, avoid drinking water in the night (it awakens the body) and use lightweight microfibre duvets.

Key to this, however, is a more complex series of sleep segments especially suited to riders in the midst of a punishing schedule of ride after ride. He advises Tour riders to get in sync with the body's circadian rhythms, maintaining a constant waking-up time and learning about


the body's instinctive sleep cycles – disputing the convention that dictates we need eight hours' sleep every night.

'It helps all-round performance if you redefine your approach to sleep and make what you do before and after it even better. Think in 90-minute recovery cycles (see 'Sleep patterns' below) – during which the body goes through different levels of rest and repair – not sleep between two random points.'

With your intended wake-up time as your starting point, work backwards in 90-minute cycles to figure out when you need to go to sleep. 'Seven and a half hours is five of those 90-minute cycles. So if you need to get up at 6.30am, you should be ready to sleep by 11pm.'

Littlehales also tells his charges to make up for late nights with naps – during London 2012, these were built into the team programme. But do these tricks and tips offer real benefits to everyday riders?

The results for Team GB certainly suggest they might, and research

from the Gatorade Sports Science Institute also endorses the need for a focus on the quality of sleep for long-distance cyclists. Their studies confirm that athletes need to focus on good 'sleep hygiene' to improve performance and point out that sub-maximal, prolonged exercise is more affected by sleep deprivation than short, maximal efforts. 

PILLOW TALK

Five tips for getting your head down efficiently

RESET THE BALANCE

Aim for a seven-and-a-half hours' kip every night. Any sleep debt you suffer by failing to do so should be replenished with an early night, not under your desk.

SORT STRESS

Being stressed can reduce sleep quality by up to 60%. If there's something on your mind, talk it through with someone so it's not whizzing around your head.

LIGHTS OUT

Make sure the room you sleep in is dark, cool and quiet. A blackout blind can help with two of those.

POWER DOWN

Switch off the TV and computer a couple of hours before lights out. And leave your phone alone too – the blue light from it can inhibit the production of the sleep-inducing hormone melatonin.

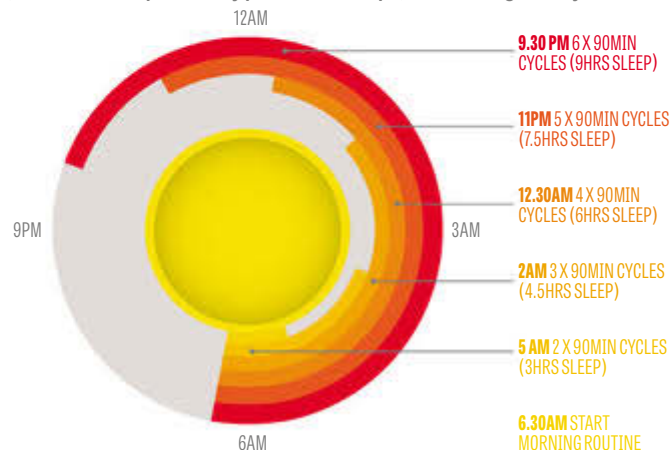
WAKEY WAKEY

Getting used to rising at the same time everyday (including weekends) can be a pain, especially in winter. Light therapy – where the slow increase of simulated daylight wakes you up rather than an alarm clock – has been shown to reduce sleep inertia and help reset the body's natural sleep rhythms (Bodyclock GO 75, £75, lumie.com).

Book your sleep profile consultation at sportsleepcoach.com

SLEEP PATTERNS

The graphic shows an 11pm to 6.30am SWR (sleep-wake routine), with five cycles. Use this to plan the best time to go to bed the night before a ride, and work the 90-minute cycle into your daytime routine with CSRP (controlled sleep recovery period – aka naps) slots during the day...

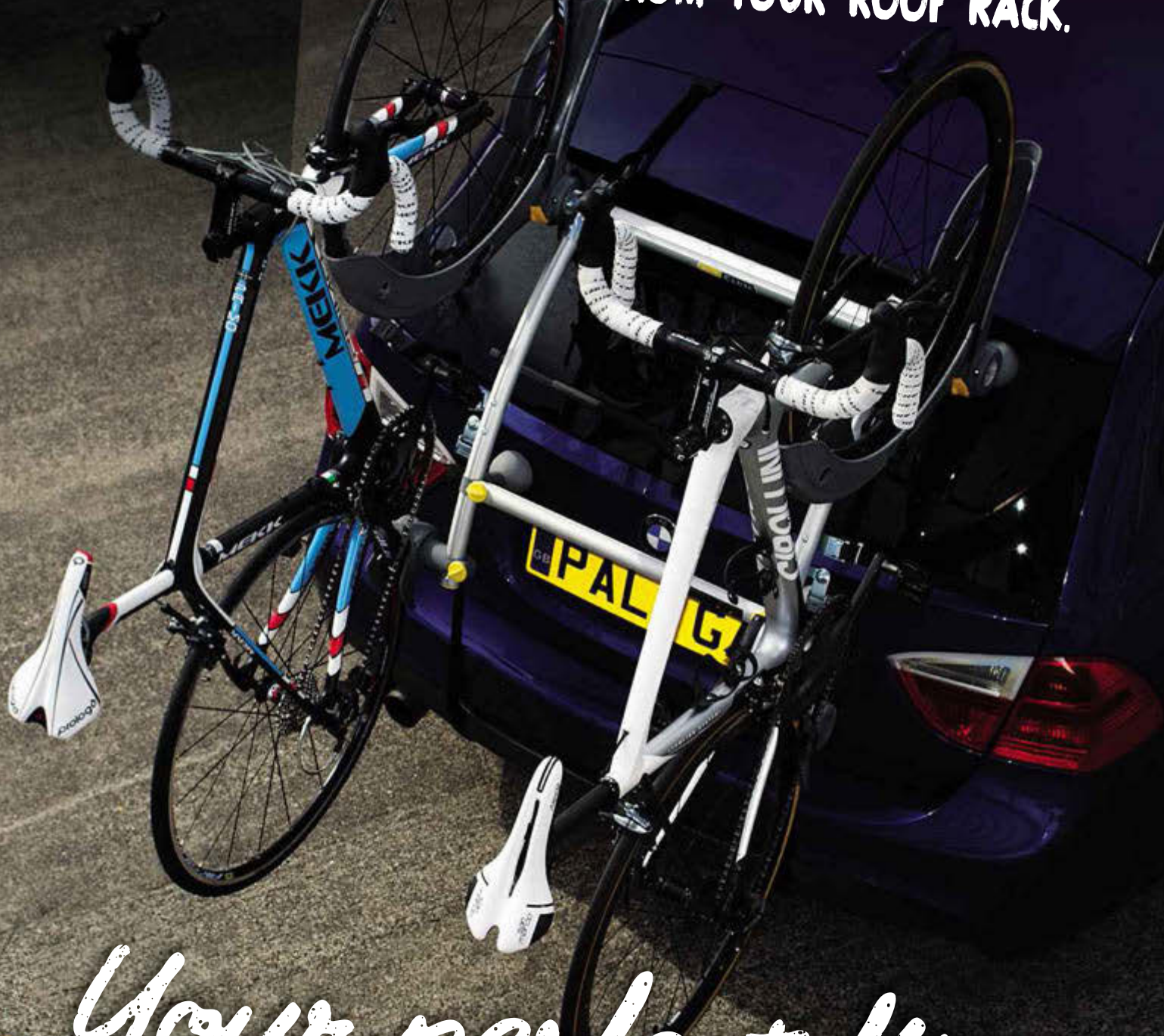


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GET YOUR HEAD STRAIGHT

Headset playing up? Don't worry – fixing it isn't brain surgery

TIME TAKEN:
10MINS
WORKSHOP
SAVING:
£10

A poorly set-up headset isn't just annoying, it's also dangerous – incorrectly adjusted bearings can play havoc with your bike's handling. Luckily, putting them back in order needn't be tricky. While there are now lots of different designs, all headsets are still essentially just a pair of bearings that sit between the frame and fork, supporting it at the top and bottom of the head tube, allowing it to turn independently of the rest of the bike. Bearings do eventually wear out, but stiffness or unwanted wobbling can often be solved with a few simple tweaks. If something seems amiss with your steering, follow our tips to get it back on track.

1



Get loose

Whether your headset seems too wobbly or too tight, you'll first need to loosen the stem in order to get the whole assembly moving. To do this, partially undo the bolts on either side of the stem (no need to remove them completely), to allow it to move independently of the fork.

2



Cap off

Use an allen key to loosen the bolt in the top cap. This will release the pressure on the bearings (known as 'preload'). Check that the top cap is pressing against the top of the stem (or a spacer) and not the end of the fork steerer tube. Retighten the top cap, using a minimal amount of force.

3



Rock steady

Holding the front brake on, place your hand behind the stem and rock the bike back and forth. If you can feel any rocking or hear any knocking in the head tube, you'll need to slightly increase the tension on the top cap. Once you're happy there's no movement, move on to the next step.

4



Swing test

Lift the bike so the front wheel is off the ground, and allow it to swing from side to side. Check that it is moving freely (if it doesn't, return to step 3 and loosen the top cap slightly), and feel for any grittiness – if there is, it may indicate that the internal bearings need replacing.

5




Get it straight

If the wheel swings freely with no unwanted movement, you're sorted. Ensure your bars are correctly aligned with the front wheel and tighten the bolts on either side of the stem. Be careful not to over-tighten them if you have a carbon fork, as this can cause damage.

6



Diagnosis

If you can't get the fork turning smoothly without the headset rocking or rattling, check the bearings. To do this, pull the fork out of the bike and pop the bearings from their cups. Roll them between your fingers – they should feel buttery smooth; if not, it's time to replace them. 



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A MOVEABLE FEAST

Twelve superfoods that will increase endurance, speed recovery and burn more fat

Beta-carotene

An antioxidant that aids recovery – and what gives sweet potatoes their vibrant colour

1 BELLY-OFF BEANS BLACK BEANS

'These pulses are great for weight loss,' says Kate Percy, author of *Go Faster Food*. 'They're packed with resistant starch – a type of dietary fibre that is harder to break down and so suppresses appetite.' Black beans are also an excellent source of slow-releasing energy and muscle-repairing protein.


2 GO FASTER GRAIN RED RICE

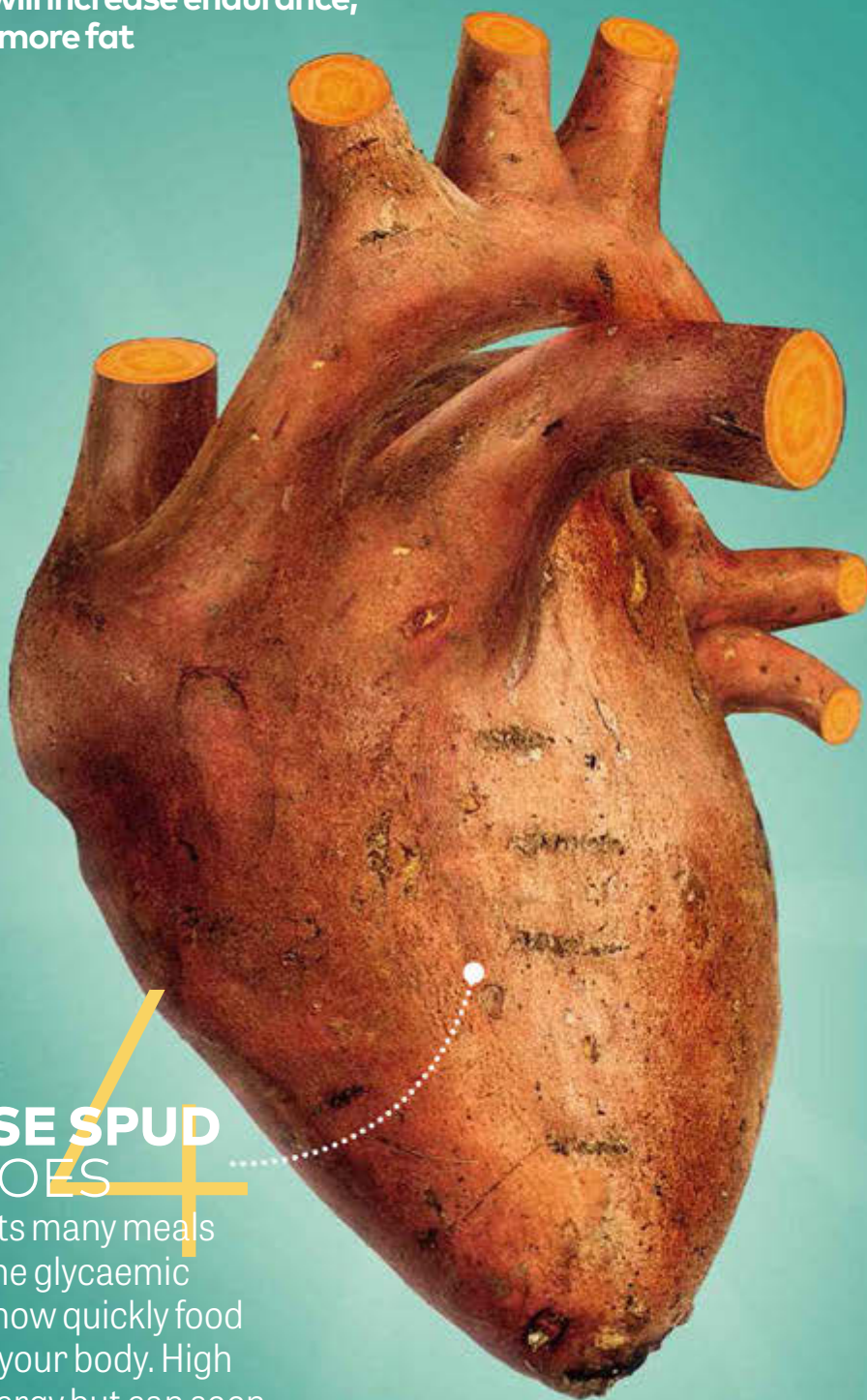
'Red is the new brown,' says Percy. 'With its nutty flavour and soft texture, this colourful rice is packed with low-GI (glycaemic index) carbohydrate and releases energy gradually to sustain endurance.' It also provides protein, iron and zinc, and more antioxidants and fibre per serving than the brown variety.

3 POWER NECTAR HONEY

Nature's energy gel packs in 17g of fast-release carbs per tablespoon (a sport-specific gel has 20-30g). A University of Memphis study showed that honey matched energy gels when it came to maintaining power output in cyclists over a 40-mile race. It also offers antiseptic and antioxidant-boosting properties.

4 SLOW-RELEASE SPUD SWEET POTATOES

A white spud complements many meals but ranks highly (90) on the glycaemic index (GI) – a measure of how quickly food is converted into sugar in your body. High GI foods provide quick energy but can soon leave you running on empty. Sweet potatoes score 50, meaning they'll fuel you for longer. 



5 POST-RIDE PROTEIN MILK

'If I were to choose just one sports food, it would be boring old milk,' says Percy. 'A litre of semi-skimmed contains 440mg sodium, 1,500mg potassium, 35g protein and 40g carbs. So as well as hydrating, it kick-starts the post-exercise muscle recovery process.'

6 BIVALVE BOOST OYSTERS

Not just good for your libido, oysters are one of the most iron-dense foods around. Iron is the chemical that oxygen attaches to in your red blood cells, and the NHS recommends that women need 14.8mg each day and men 8.7mg. However, exercising can use it up more quickly, so iron-rich foods are vital for cyclists. 'You also need more iron if you train at altitude,' says BMC Racing's sports scientist Marco Pinotti. 'Science shows people respond better to altitude with high iron levels because you need iron to produce red blood cells.'



7 HOT HYDRATION CHILLI

'It sounds paradoxical but if the riders have taken part in a particularly hot stage, I use plenty of spices in their food,' says Rob Child, biochemical nutritionist to MTN-Qhubeka. 'It stimulates their thirst so they'll drink more and fully rehydrate.'

8 REFUEL ON FAT CAFFEINE

That mid-ride café stop provides cake, warmth and a mug of fat-burning liquid – studies have shown that caffeine increases lipolysis, the breakdown of fat for energy. It also reduces the perception of fatigue and increases focus. Just don't have too much or you won't sleep.



1 PILCHARD PEDAL POWER SARDINES

As cyclists we're very much reliant on our joints to keep us pedalling, specifically the knee joint. Enter sardines. 'They contain omega-3 fatty acids, which act as an anti-inflammatory to help reduce swelling and discomfort,' explains Percy. 'Other good sources are salmon and herring.'

11 ANTIOXIDANT BERRY BENEFITS BERRIES

The oxygen radical absorption capacity (ORAC) scale measures the antioxidant capacity of foods. Colourful fruit like elderberries and cranberries score highly, at 14,697 and 9,584, respectively. And red-wine drinkers can raise a glass to the fact that cabernet sauvignon hits a healthy 5,043. Cheers!

12 RED FOR RECOVERY TOMATO JUICE

Researchers in Greece have shown that tomatoes could be better for you post-ride than recovery-specific drinks. Nine athletes drank either tomato juice or energy drink after exercise. Juice drinkers recovered quicker thanks to the antioxidants in tomatoes reducing the levels of muscle-damaging enzymes in the blood. As a tomato is over 90% water, it's also good for hydration. Bloody Mary, anyone?



MEALS ON WHEELS

The best way to utilise these super-foods for a 100km ride

BREAKFAST

BETROOT SMOOTHIE

'Some of the guys have a smoothie before a ride and it'll feature beetroot,' says Dr John Baker of MTN-Qhubeka. 'But you can also top up with a BeetIt shot (£1.40 for 70ml, ocado.com), which is far more concentrated.'

DURING THE RIDE

TOMATOES

'I recommend to riders that they take tomatoes with them,' says pro cycling chef Dirk van Schalen. 'They have a high water content and plenty of antioxidants. Pomodoros are the best as they're relatively hard and won't squash in your pocket.'

HONEY – AND COFFEE!

'On mountain stages, I prepare my own bottle with two espressos and a lot of sugar or honey,' Chris Froome told reporters prior to the 2014 Tour de France. 'I usually have it towards the end of a stage for a final push.'

POST-RIDE

CHOCOLATE MILK

Milk's muscle-repairing qualities are well known but chocolate milkshake boosts the carb content, replenishing energy, as well as accelerating the uptake of the amino acids in the milk.



9 CAN'T BEET IT FOR SPEED BEETROOT

Professor Andrew Jones of Exeter University has shown that beetroot improves endurance. The mechanisms at play begin with the nitrates in the beetroot, which are converted to nitric oxide in the body, enabling muscles to work more efficiently and demand less oxygen. Other good news is that beetroot has a greater effect on recreational riders than on elites.





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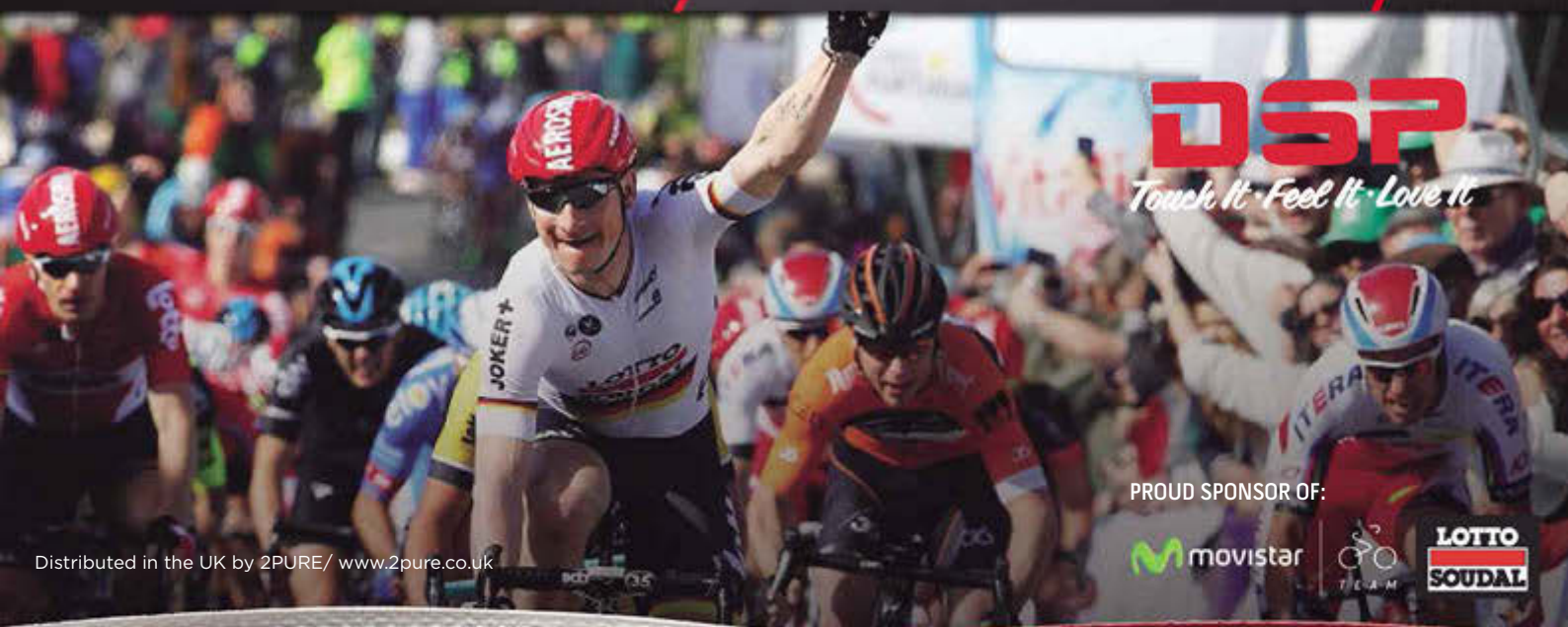
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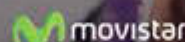


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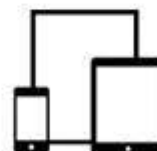
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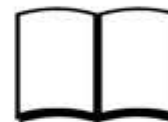


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Shifters: Campagnolo Veloce, 10-speed

Front & rear mech: Campagnolo Veloce
Chainset: Miche
Brakes: Miche
Bars: RHM01
Stem: Zero1
Seatpost: RSx01
Rims: Miche Reflex
Tyres: Vittoria Rubino

For your chance to win, go to bikesetc.co.uk/Dedacciai



ReviewsEtc

Welcome to *BikesEtc*'s reviews section. Whether you're after a bike, components or clothing, we've put the latest gear through its paces to find what's right for you

PHOTOGRAPHY HENRY CARTER, JENNI LESKINEN

**£1,800 disc
brake bikes**
p76



**Summer
jerseys**
p101



Groupsets
p106



Socks
p113



Bike travel cases
p117



**Comfort
seatposts**
p123



**Budget
carbon
wheels**
p126



THE AWARDS



Best Value

The winner of this award may not have the highest overall score in the test, and it may not be the cheapest, but it will always represent especially good performance at its price.



Best In Test

The overall winner in each group test. Scoring highly in all criteria, it will be an excellent all-rounder. Where two or more items achieve equally high scores, it will be the one that has that extra something – a touch of style, a special feature – that takes the prize.



BikesEtc Gold Award

This prestigious award goes to bikes, accessories, components or items of apparel with exceptional levels of performance, design and build quality that make them must-haves. Don't expect to see it every issue – we only hand it out when it's truly deserved.



DISCO FEVER!

Set to make their debut in pro racing this year, disc brakes are now a fact of life on road bikes. Is it time for you to make the switch? We tested five bikes around £1,800 to help you decide...

WORDS ANDY WATERMAN

Things don't move quickly in the world of drop-bar road bikes. Compare an MTB from 1985 to one from today and they're barely recognisable – the wheels are larger, there's suspension front and rear, the saddle height is hydraulically controlled and the frame is made of carbon fibre. Do the same comparison on the road and you're splitting hairs – more gears, sloping top tubes, and that's about it.

Like them or not though, disc brakes are coming to drastically change the performance, shape and look of road bikes, and we reckon that by 2020, rim brakes will be a thing of the past. At present, we're in a period of flux – standards aren't standardised, prices are all over the place and intended use is barely settled upon. Disc-brake road bikes are available with carbon, aluminium or steel frames, with hydraulic or cable-operated brakes, with

standard quick-release or bolt-thru wheel axles, and are intended for everything from fast road riding and racing (well, not quite yet) to touring. Having taken a good look at the market, £1,800 seems about the point where the broadest array of options are available, so we called up one of every animal. So what are we looking for? Bikes that ride just as well as you'd hope an £1,800 rim-brake bike to ride, with all the additional positives of disc brakes.

BIKES ON TEST



SARACEN AVRO
£1,799

CANNONDALE CAAD10
RIVAL DISC £1,800

TREK DOMANE 4.3 DISC
£1,900

GENESIS EQUILIBRIUM
DISC LTD £1,850

RALEIGH REVENIO 5 DISC
£1,750



HOW WE TEST

We got unlucky this issue; riding back from an evening chaingang on the Genesis Equilibrium, a kid, maybe 11 or 12, cycled out between two parked cars without looking. Panic, brake, swerve, collide; there was nowhere to go and nothing to be done – not even hydraulic disc brakes could save us. Our front wheels collided at right angles and *BikesEtc* was thrown over the bars. The kid was OK, we were OK, the front wheel of the Equilibrium, however, was knackered.

Still, we hope it goes to demonstrate the lengths we go to when testing bikes. We don't take anything the manufacturers tell us as gospel: the first thing we do when a new bike arrives is to take its measurements and compare our findings with the geometry stated. As for riding, we like to include as many real world situations as possible, from our urban 15km commute through to leisurely 100km+ escapes into the country and super speedy chaingangs.

THE OVERALL RATING FOR EACH BIKE IS BASED ON THESE ELEMENTS...

FRAME

Our in-house testing questionnaire rates frames out of 30, based on geometry, on-road feel, stiffness, compliance, finish and intended use.

COMPONENTS

We rate components out of 20, based on groupset and finishing kit – great bars and stems will be marked down if they're the wrong size for the frame.

WHEELS

We rate the wheel and tyres package out of 20, weighting it towards the wheels: tyres come and go but wheels are a more expensive element to replace.

THE RIDE

Rated out of 30, we take into account ride quality and also value – does the bike do what we expect of a bike at this price? The best exceed expectations.





Saracen Avro £1,799

Saracen has hit the road in style with the Avro

About the bike

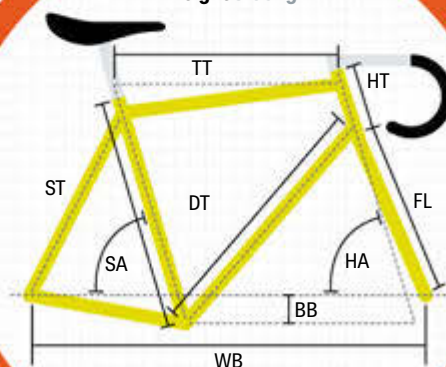
We don't see many Saracen road bikes here at *BikesEtc*, the brand being better known for its MTB and trail bikes, but that's not to say the company doesn't have pedigree – its downhill racing team is among the best in the world, and young Welsh rider Manon Carpenter has piloted a Saracen to a World Championship jersey. But can Saracen bring its off-road expertise to the tarmac? The Avro is certainly a handsome bike, but does its ride match its looks? Only one way to find out...

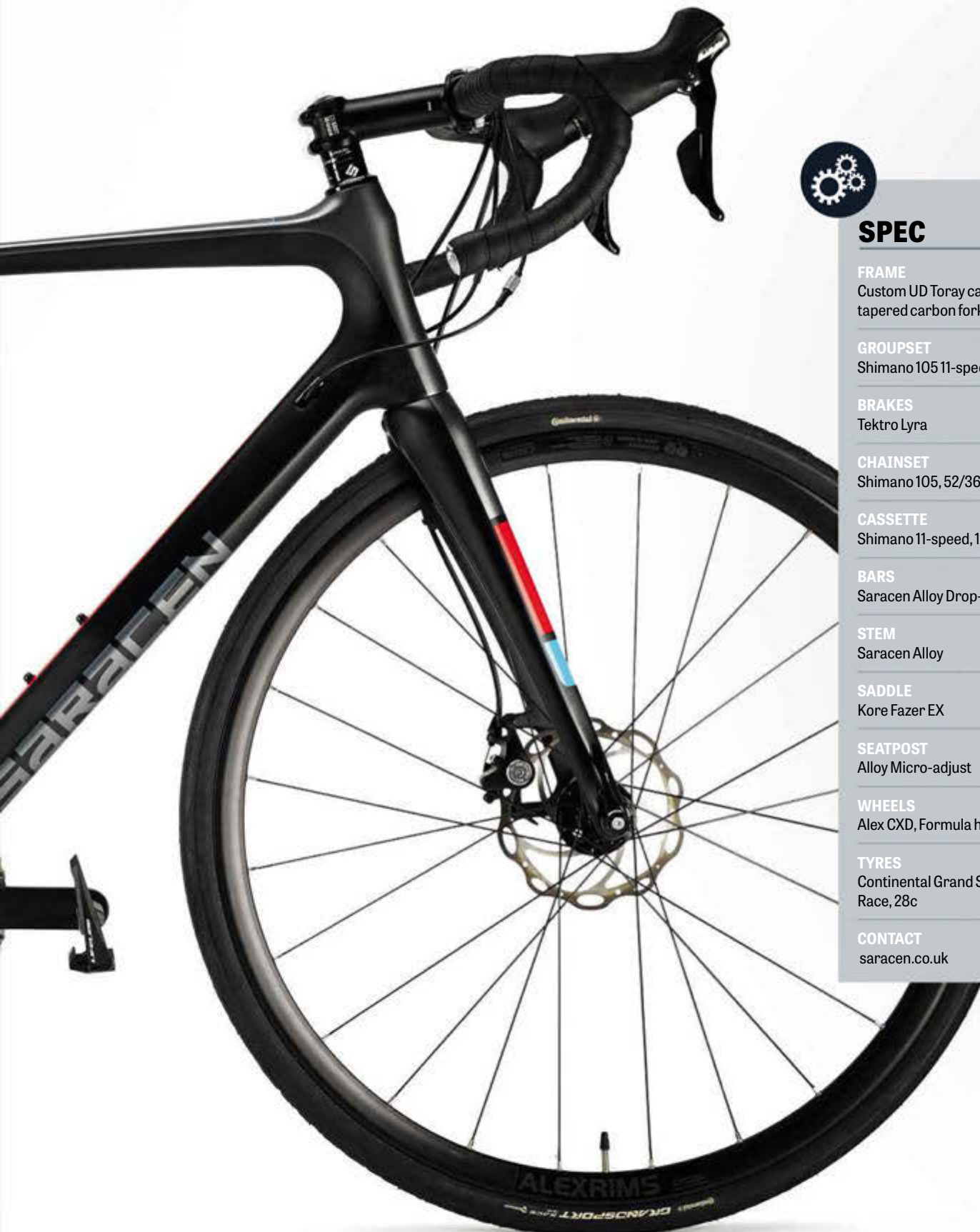


GEOMETRY

	Claimed	Measured			
			Head tube (HT)	180mm	180mm
Top tube (TT)	570mm	570mm	Head angle (HA)	73°	72.7°
Seat tube (ST)	570mm	575mm	Seat angle (SA)	73°	73°
Down tube (DT)		606mm	Wheelbase (WB)	1,006mm	1,005mm
Fork length (FL)		372mm	BB drop (BB)	70mm	70mm

Size tested 57
Weight 8.60kg





SPEC

FRAME

Custom UD Toray carbon, tapered carbon fork, disc

GROUPSET

Shimano 105 11-speed

BRAKES

Tektro Lyra

CHAINSET

Shimano 105, 52/36

CASSETTE

Shimano 11-speed, 12-28

BARS

Saracen Alloy Drop-bar

STEM

Saracen Alloy

SADDLE

Kore Fazer EX

SEATPOST

Alloy Micro-adjust

WHEELS

Alex CXD, Formula hubs

TYRES

Continental Grand Sport Race, 28c

CONTACT

saracen.co.uk

Frame

Carbon is verging on omnipresent when you reach the £1,800 price point with standard rim brake road bikes, but throw disc brakes into the mix and carbon becomes more of a rarity. In this case, the Avro is one of only two carbon bikes on test, and uses bolt-thru axles front and rear. Bolt-thru axles, as the name suggests, bolt the two sides of the frame together, unlike a quick-release, which

clamps both sides together under pressure. The bolt-thru is consequently stiffer, so good for discs as it helps prevent brake rub out of the saddle, and unlike quick-release, the braking forces aren't conspiring to undo the system. And because we now have lawyer tabs on the ends of our forks to stop front wheels from dropping out if we forget to tighten a quick release, it doesn't take any longer to remove a bolt-thru wheel. Saracen has used

unidirectional Toray branded carbon on the Avro, so the frame has a matt finish with no discernible carbon weave. The paint job got a lot of positive comments from cyclists and non-cyclists alike. Unlike aluminium frames which are welded, the Avro's carbon frame is moulded, so the geometry is almost exactly as claimed. A wheelbase of over 1,000mm hints at stability and confidence, as does the clearance for 28mm+ tyres. [🔗](#)



The hubs are noisy, but we found it negated the need for a bell on our commute

Components

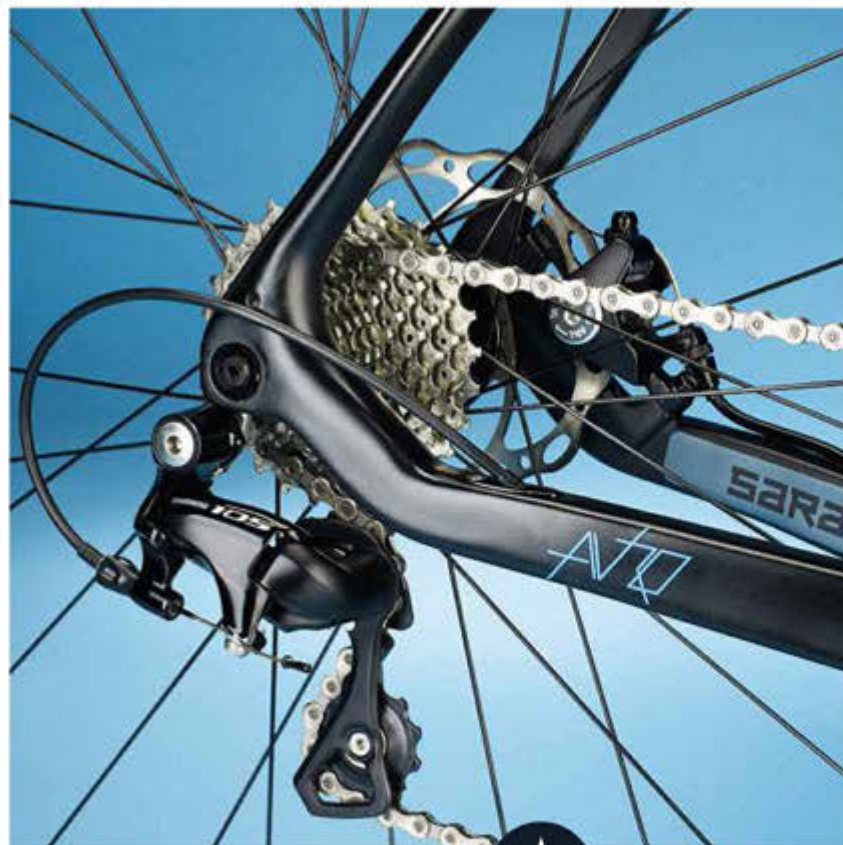
With a carbon frame, mechanical rather than hydraulic disc brakes are used to keep the Avro on budget. Do they work as well as hydraulics? When they're new they certainly do, but the cables will require more maintenance than hydraulics to keep them running smoothly. We found that occasionally when stopping at lights, the Tektro Lyra callipers would almost grab the rotor, not so much as to force a skid, but just minutely, to settle the pad within the calliper. It was off-putting but we could easily live with it, and the brakes performed excellently when stopping at speed. Elsewhere we've got an almost complete Shimano 105 groupset with a 12-28 cassette and 52/36 chainset – no complaints there. The advantage of the mechanical discs is that you can use normal Shimano shifters, which feel absolutely brilliant in the hand – svelte, but significant enough to feel secure.

Wheels

First up, the Avro gets bonus points for sporting 28mm tyres. We've heard a lot in recent years about fatter tyres being faster, more comfortable and offering better grip, and while manufacturers have nearly all moved away from 23mm, they've been conservative in only going as far as 25mm. On disc brake bikes, the tyre's contact patch is the limiting factor for braking, so going large makes sense. And on the road, the Grand Sport Race tyres roll fast, grip well, and combined with the carbon frame, offer a noticeable damping effect over road buzz. The wheels themselves use bolt-thru axles and Alex rims. Rather than using SRAM's Maxle-style axle levers, Saracen has used DT-style levers: wind them up to tighten and unwind to remove the wheel.

The ride

The Saracen Avro is available in four sizes between 51 and 60cm in 3cm increments, with our demo bike being a 57. The geometry was almost exactly as stated, and with a 1,000mm+ wheelbase and 28mm tyres, we were looking forward to a fast, stable and comfortable ride. That's exactly what we got – the length of the bike inspires confidence and we found ourselves sprinting into corners to see just how hard we could push the fat Conti tyres. The



long wheelbase allows more room for manoeuvre so as you get tired and less alert, the bike's handling is less likely to catch you out than a short, 'fast-handling' race bike. As always, the 105 drivetrain proved excellent and combined with the Tektro disc brakes to provide consistent, powerful braking. These cable discs aren't much more powerful than rim brakes under perfect conditions, but they won't deteriorate in the wet, and the wheels should last a long time – in fact, you're more likely to need to replace the hubs than the rims. The choice of parts shows a good understanding of what's important. As one of the lighter bikes, it climbs well, and the stiffness, geometry, frame material and specification work well together to make it descend like a bat out of hell. Arguably the best-looking bike here, we'd certainly recommend it and hopefully, Saracen will add a hydraulic brakes option next year.

RATING

FRAME

Long wheelbase and bolt-thru dropouts

COMPONENTS

Good mechanical brakes, excellent 105 groupset

WHEELS

Bonus points for bolt-thru hubs and 28mm tyres

THE RIDE

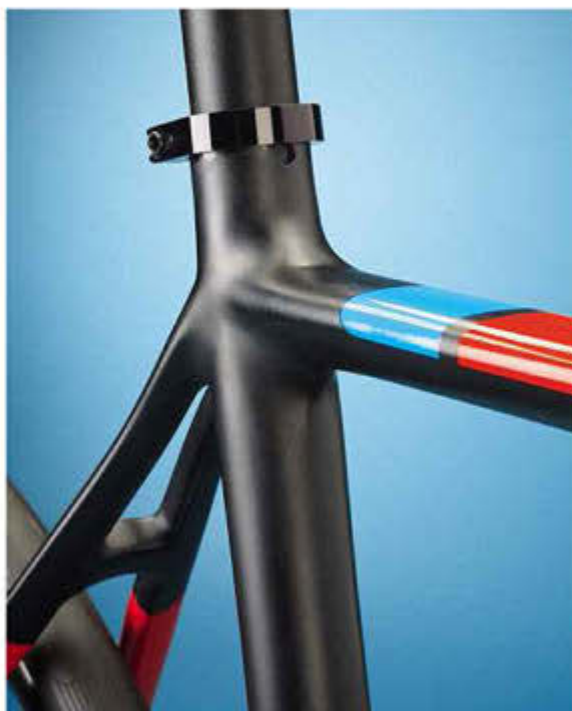
A fast, stable, comfy ride that won't catch you out

OVERALL

8.2
10



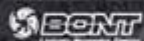
Saracen, unencumbered by any roadie heritage, has plumped up its tyres to a fat 28mm



We were sprinting into corners just to see how hard we could push the Conti tyres

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Cannondale CAAD10 Rival Disc **£1,800**

Former *BikesEtc* test winner now comes with discs

About the bike

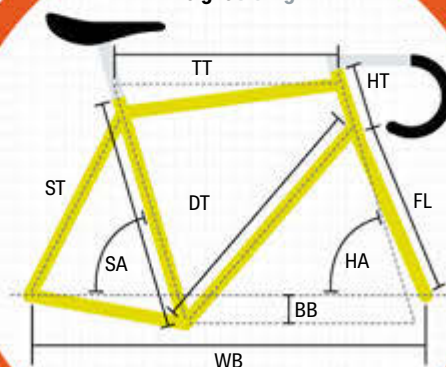
When we reviewed the Cannondale CAAD10 Racing Edition in issue six, we were blown away by its low weight, incredible power delivery and excellent spec. For the exact same price as that bike, Cannondale also produces the super-swish disc brake-equipped Rival Disc. Already a *BikesEtc* test winner, does it live up to the standards set by its rim-braked brother? We took it for a spin to see how it compares...



GEOMETRY

	Claimed	Measured			
			Head tube (HT)	155mm	155mm
Top tube (TT)	560mm	560mm	Head angle (HA)	73.0°	71.5°
Seat tube (ST)		570mm	Seat angle (SA)	73.5°	73°
Down tube (DT)		602mm	Wheelbase (WB)	993mm	997mm
Fork length (FL)		375mm	BB drop (BB)	69mm	71mm

Size tested 56
Weight 8.57kg





SPEC

FRAME

CAAD10 Disc,
Smartformed 6069 Alloy,
BB30, full carbon disc fork
1.125-1.25 tapered steerer

GROUPSET

SRAM Rival Hydraulic 22

BRAKES

SRAM Rival

CHAINSET

FSA Gossamer Pro BB30,
52/36

CASSETTE

SRAM, 11-28

BARS

Cannondale C3 butted
6061 alloy, compact

STEM

Cannondale C2 6061 alloy

SADDLE

Prologo Kappa Evo STNL

SEATPOST

Cannondale C3 alloy

WHEELS

Fulcrum Racing Sport DB

TYRES

Schwalbe Lugano, 25c

CONTACT

cannondale.com

Frame

Adding disc brakes isn't quite as easy as adding the right mounting points, but to look at the CAAD10 Disc frame, it's remarkable how close it is to the non-disc version, right down to the arch still being in place between the seatstays where the rear brake would normally go. The CAAD10 frame is aluminium, a material Cannondale is uniquely associated with thanks to its light, race-winning

frames from the late '90s and early 2000s. It uses a post mount for the rear brake, tucked inside the rear triangle, which means only the chainstays experience additional braking forces, allowing the seatstays to remain slender, aiding comfort. It's also interesting to see that in the pursuit of comfort – not aluminium's strong point – Cannondale has stuck with its 1.125 to 1.25in tapered steerer tube rather than going to the more common (and one

assumes stiffer) 1.5in tapered fork. The additional forces associated with placing a powerful hydraulic brake at the end of a fork leg could have been a good excuse to move to the popular fatter standard, but Cannondale hasn't, in the name of reducing rider fatigue. The same can be said of the seat tube, which hosts a 27.2mm seatpost rather than something oversized – this will flex slightly more than something of a larger diameter. [Twitter](#)



The CAAD10 Disc's frame retains most of the features of the BikesEtc award-winning rim-brake version

Components

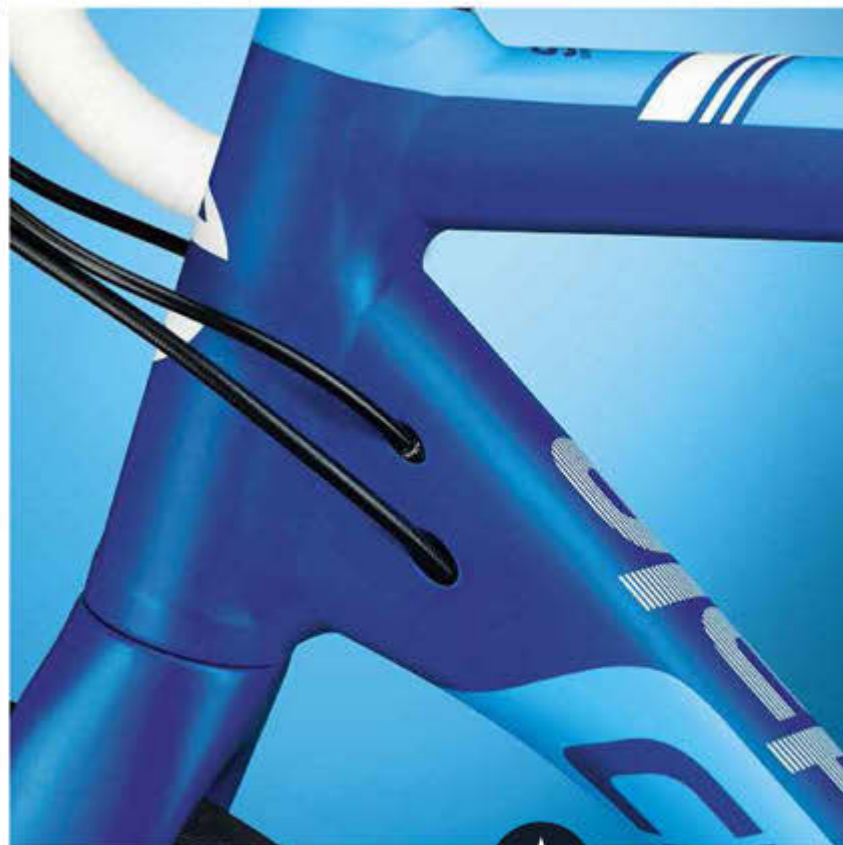
SRAM's 22-speed Rival is likely the most affordable hydraulic groupset. The lever hoods look undeniably huge but in the hand, they're actually not much bigger than Shimano's mechanical hydro shifters. The tall top part is necessary to house a hydraulic reservoir, and out riding, it actually feels good, providing an additional hand position and making a normal hand position feel secure – where we'd normally reach for the drops on descents, we're less inclined to on SRAM's. Gear shifts are accurate, but the shifting action requires noticeably more force than Shimano. This could be a bad thing, but over rough roads, you know where you stand – you're not going to make any unexpected miss-shifts. Cannondale's own-brand finishing kit is all very good quality, largely unchanged from the equipment supplied on the Racing Edition, with the exception of the handlebars, which here are a shallow ergonomic drop rather than a traditional round drop.


Wheels

Our demo bike came supplied with Fulcrum Racing Sport DB wheels, a package only available when supplied as part of a complete bike. They use a semi-deep, fairly wide rim to give the tyres a good profile, and six-bolt disc hubs, which bizarrely use 21 spokes front and rear. So that means seven spokes laced radially on the non-disc side on the front, and 14 spokes on the disc side, laced in a traditional crossed pattern to help resist the powerful braking forces emanating around the hub. At the back, the sides are reversed, so the drive side gets crossed spokes, while the disc side gets radial spokes. We're more used to seeing crossed spokes on both sides with disc wheels, to resist pedalling and braking forces, but we had no problems.

The ride

When we tested the rim-braked CAAD10 Racing Edition, we loved just how purposeful it was – it had Racing in its name and racing in its blood, and every component felt chosen specifically for that purpose. Having had such a good experience on that bike, it's inevitable that it's what we're comparing this bike to. Because that bike was so focussed, it brought home that the CAAD10 Rival Disc really isn't. So



while we enjoyed our time on it, it left us feeling conflicted. For example, road racing is still a no-no on disc brake bikes, so why keep remnants of the non-disc bike, such as the arch between the seatstays that boost stiffness, but possibly also harshness? The addition of discs makes a bike feel immediately more resilient, like you should be able to ride gravel roads no problem, but with the tyres downgraded from (brilliant) Schwalbe Ones to (cheap) Schwalbe Luganos, we flatted the second we deviated off the road and on to a traffic-free gravel cycle path. It almost felt that with the upgrade to discs, the bike had actually become less versatile. It still felt fast – very fast – and stiff, and for £1,800, it's great value, and certainly a good choice for serious sportive riders. The only disappointment was, having had our minds blown by the Racing Edition, how familiar it felt – just like a good, normal bike. 



RATING

FRAME

Top alloy frame as you'd expect from Cannondale

COMPONENTS

SRAM's hydraulic Rival groupset performs well

WHEELS

Surprisingly low spoke count but reliable

THE RIDE

Good, but not as exciting as the non-disc version

OVERALL

8.4

10



If we lived somewhere mountainous, this bike would be brilliant. The braking would be consistent wet and dry and, when braking consistently on a long descent, you wouldn't be wearing away costly rims



This is great for sportive riders but all felt familiar – like a good but normal bike

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Trek Domane

4.3 Disc £1,900

If Fabian Cancellara could ride a disc bike, this would be it

About the bike

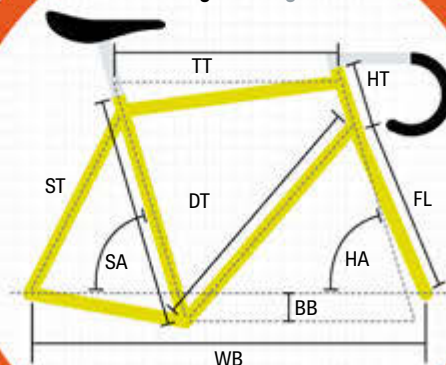
When Trek launched the Domane back in 2012, it was intended as a Classics season cobble gobble, tailored to the talents of Trek Factory Racing's superstar rider Fabian Cancellara. With two Tour of Flanders wins and one at Paris-Roubaix, it clearly works for him. But with the move to disc brakes, does it work for mere mortals too?



GEOMETRY

	Claimed	Measured			
			Head tube (HT)	160mm	160mm
Top tube (TT)	542mm	538mm	Head angle (HA)	71.3°	71.3°
Seat tube (ST)	500mm	505mm	Seat angle (SA)	73.7°	73.4°
Down tube (DT)		604mm	Wheelbase (WB)	1,010mm	1,015mm
Fork length (FL)		382mm	BB drop (BB)	80mm	82mm

Size tested 54
Weight 9.58kg





SPEC

FRAME

400 Series OCLV Carbon, IsoSpeed, Trek IsoSpeed carbon disc fork with 15mm bolt-thru axle

GROUPSET

Shimano 105

BRAKES

TRP Hy/Rd cable/hydro disc

CHAINSET

Shimano RS500, 50/34

CASSETTE

Shimano 105, 11-32

BARs

Bontrager Race Blade VR-C

STEM

Bontrager Race Lite

SEATPOST

Bontrager Carbon

WHEELS

Bontrager Tubeless Ready disc

TYRES

Bontrager R1 Hard-Case Lite 25mm

SADDLE

Bontrager Paradigm 1

CONTACT

trekbikes.com

The frame

Where to start? Trek isn't known for breaking moulds, but a quick glance at the Domane tells you this is no ordinary bike. The big talking point of the Domane has always been the IsoSpeed decoupler, which allows the seatstays and seat tube to move independently of each other in the vertical and fore-aft planes. Trek claims the system allows for as much as 35mm of compliance, perfect for rough

roads, just like you get in the Classics. In 2012, when the Domane was first released, IsoSpeed was a pretty out-there concept. But now, with bikes like the Giant Defy and Cannondale Synapse, compliance is less of a USP. What is unique is the Domane's geometry. The lower the bottom bracket is, the more stable the bike feels, and while we're used to seeing bottom bracket drops (the distance the centre of the BB is below the wheel axles) of

around 70mm, the Domane has a huge 80mm of drop – in fact, we measured it at 82mm on our size 54. That translates to a feeling of riding low between the wheels, and huge cornering confidence. Compounding this measurement is the wheelbase which at over 100cm, is huge for a 54cm bike. Again, more length equals greater stability, and more room for manoeuvre when speeds go up, or you start getting tired. Add



The Domane's geometry is unique – it has a huge 80mm bottom bracket drop, making the bike feel super stable

bolt-thru hubs front and rear to increase lateral stiffness, and you've got a bike that handles like no other road bike we've ever ridden, with pin-point precision downhill.

Component

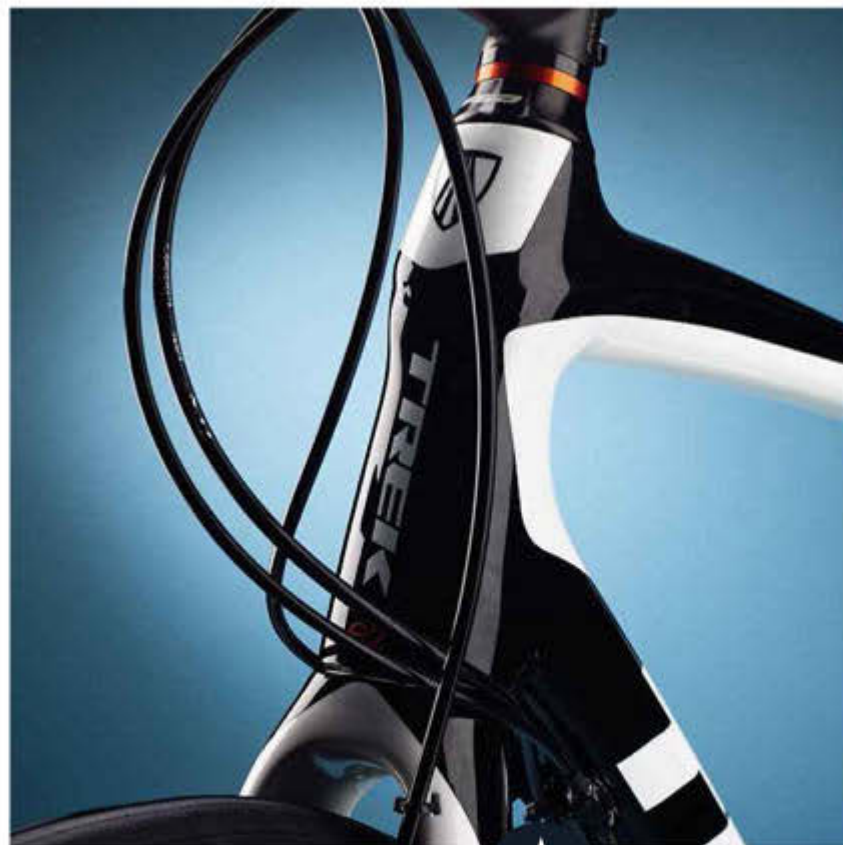
Have we told you how much we like Shimano's 11-speed 105? Shame Shimano doesn't make hydraulic brakes at 105 level – Trek has gone for the Hy/Rd, which use cables to actuate a hydraulic calliper. Those callipers end up a bit bulky as a result but they work, and offer a good compromise – braking power that's not quite as full-on as full hydraulics, but definitely more powerful than cable discs. The Bontrager finishing kit is all good gear, including the carbon seatpost, but the 90mm stem is a little short for us and the bars an odd shape with more reach than most.

Wheels

One of only two bikes on test with bolt-thru axles, we're definitely of the opinion that they're a good thing, keeping the brake rotors in just the right place between the pads to stop rubbing. But jeez, are they ugly. The wind-up ratchet axles on the Saracen are tiny compared to the quick-release levers used here – yes, you flip a lever and then unwind the whole axle. This is a design that has come direct from mountain bikes and in this application, seems like overkill. The Bontrager wheels are tubeless-ready and a decent everyday wheelset, as are the R1 Hard-Case tyres – you'll want to upgrade to something lighter, more supple and grippier eventually, but these are a decent start.

The ride

We like to talk a lot about numbers at *BikesEtc*, and while that could be perceived as boring, it really does inform what you're able to feel on the road. As soon as we saw the Domane's geometry we were excited to see just how fast we could corner on it. The long, low-slung layout of the bike is incredibly forgiving – a world away from skittish, fast-handling race bikes that need to be tamed by a steady pair of hands. The IsoSpeed definitely works and takes the edge off big hits and road buzz, but don't expect an armchair ride – the Domane is still very much a road bike with efficiency and power transfer at its core. And despite being mid-pack



when it came to weight, we didn't feel the Domane was sluggish once up to speed – in fact, the stiff bottom bracket area really encourages you to jump out of the saddle and sprint. We had doubts about the TRP Hy/Rd brakes but the combination of comfortable 105 shifters and powerful but controllable hydraulic braking actually proved an unexpected hit. It's not a lightweight set-up and technologically, it's likely to be superseded in the next year or two, but for the moment, it's a good compromise. As we discussed in the introduction, we came into this test with an open mind, looking to see what is possible when you combine disc brakes and road bikes. With the Domane Disc, Trek has produced a bike that genuinely breaks the mould and rides faster, and with more confidence than any rim-braked road bike we've tested. Is the Domane a glimpse of the future? We think so.

RATING

FRAME

Long wheelbase + very low bottom bracket = the future

COMPONENTS

Nice mix of Shimano, TRP and Bontrager kit

WHEELS

Decent tubeless-ready wheels with bolt-thin axles

THE RIDE

A fast, exciting, genuinely mould-breaking ride

OVERALL

8.9

10



The hubs use the Shimano Centrelock system to attach the discs – you'll need an external BB tool to remove them



The IsoSpeed takes the edge off big hits and road buzz – but don't expect an armchair ride

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Genesis Equilibrium Disc Ltd **£1,850**

The one steel bike on test, but is it a steal or just heavy metal?

About the bike

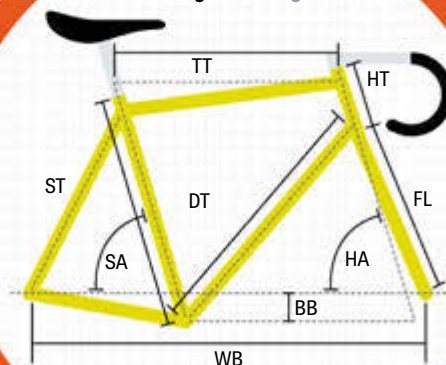
With rack and mudguard eyes and sporty geometry, the Equilibrium Disc series is Genesis's do-it-all bike – training, sportive riding, commuting, audax and fast touring. It's ready for anything. Also available with rim brakes, discs just add to the bike's all-round versatility, allowing the use of fatter tyres and providing reliable braking even when fully loaded. But is the steel frame a match for the lighter bikes on test?



GEOMETRY

	Claimed	Measured			
			Head tube (HT)	155mm	155mm
Top tube (TT)	560mm	554mm	Head angle (HA)	72°	72.5°
Seat tube (ST)	530mm	535mm	Seat angle (SA)	73.5°	73.5°
Down tube (DT)		614mm	Wheelbase (WB)	1,010mm	1,009mm
Fork length (FL)		380mm	BB drop (BB)	72mm	75mm

Size tested 56
Weight 10.09kg





SPEC

FRAME

Reynolds 725 steel, carbon road disc fork with alloy steerer

GROUPSET

Shimano 105

BRAKES

Shimano BR-RS785

CHAINSET

FSA Gossamer, 52/36

CASSETTE

Shimano CS-5800, 11-28

BARS

Genesis Road Compact

STEM

Genesis

SEATPOST

Genesis

WHEELS

Mavic Aksium Disc

TYRES

Continental Grand Sport Race, 25c

SADDLE

Genesis

CONTACT

genesisbikes.co.uk

The frame

The Equilibrium's Reynolds 725 frame cuts a unique figure, and the fact that the steel frame makes it look like a 'proper' bike is a major selling point. Its modern features, like heat-treated tubing, disc brakes, contemporary geometry and a carbon fork, only add to the allure. Reynolds 725 tubing features similar mechanical properties to Reynolds' famous lightweight 753 tubing, and

because it's heat treated, thinner (lighter) tubes can be produced with no loss of strength. Genesis says we should 'think of it as chromoly on steroids', and while we'd never condone doping, they have a point. At their thinnest, the butted tubes are 0.4mm thick; at the ends of the tubes where the welds are, tubes thicken to 0.7mm. It's interesting to see that Genesis has persisted with a standard 1.125in head tube on the Equilibrium Disc. With the additional

forces going through the fork, it might have been a good idea to swap to a 44mm head tube, which would have allowed for a stiffer tapered fork. That said, we had no issues with steering or braking. On a steel frame, it's nice to see external headset cups and a traditional threaded bottom bracket. This frame will last years and you'll never have trouble finding a replacement 1.125in headset or external bottom bracket. [↗](#)



Our test bike came with standard 160mm rotors but the production bike uses Shimano's IceTech rotors with cooling fins

Components

Shimano 105 mechs are used along with Shimano's excellent non-series (but ostensibly Ultegra level) mechanical/hydraulic STI units and brakes: the catchily named combo of ST-RS685 shifters and BR-RS785 callipers. It's the same system that's used on the Raleigh, except here, Genesis has used larger (and therefore more powerful) 160mm disc rotors – having used 140s on the Raleigh, we're coming to the opinion that the smaller standard is actually preferable, offering more modulation. Our demo bike came with standard rotors, but the production bike is equipped with Shimano's excellent IceTech versions. These use fins and a mix of materials to dissipate heat more effectively than standard steel. Experience tells us they make a noticeable difference on long descents. Most of the time, though, the extra performance won't be noticed. The bars, stem, seatpost and saddle are the same units Genesis supplies across all their bikes – decent, if unexciting, kit.

Wheels

Mavic's Aksium wheelset is a stalwart and the new disc version continues with the theme of reliability over lighter weight. For a budget wheelset, that's a good thing, and we've never had any problems. The current disc version uses straight-pull spokes and a disc-specific rim. The rim measures 17mm internally, which is wider than older Mavic rims, but still not as wide as some on the market. Continental Grand Sport Race tyres are a familiar choice and work well on dry roads. They grip well in the wet, but also pick up debris and puncture more often than we'd like.

The ride

Genesis is one of only two bikes here to sport its rear brake calliper on the seatstay rather than the chainstay (the other is the Raleigh). The one irritation that can come about as a result of mounting the brake here is that it can make it difficult to mount a rear rack, but Genesis has moved the mounting point up the seatstay so a rack won't foul the brake calliper. The Equilibrium is a long bike. With a 110mm stem, at a size 56, it actually felt bigger than the 57cm Saracen. As always, this is one of the reasons why buying



from a local bike shop is advantageous; they can help ensure you leave with a bike that fits. The steel frame is noticeably more comfortable than the two aluminium bikes here, and it's pretty sprightly too, at least on the flat – we rode it on a local chaingang and found it kept up quite comfortably (well, the bike did – our legs were less inclined to make the effort). Disaster struck a couple of km from home on that ride though – a young kid rode out from between parked cars without looking, leaving our tester nowhere to go except into his front wheel, then over the bars. Not even disc brakes could avoid it. Everyone was OK, but the Mavic front wheel was taco'd. Unfortunately, the Mavic hubs are slotted, so under extreme impacts, spokes can pop out. That's what happened to us – two spokes popped out, leaving a bent wheel unrideable, even with a disc brake. Overall though, a fun, versatile, bike.

RATING

FRAME

Classic steel looks good and should last a long time

COMPONENTS

Excellent Shimano hydraulic brakes

WHEELS

Well-built budget wheels with wide-disc specific rims

THE RIDE

More comfy than alloys bikes but still sprightly

OVERALL

8.0
10



When the tyres wear out, we'd replace them with 28mm-wide Continental Gatorskins



The steel frame is noticeably more comfy than the two aluminium bikes on test

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RALEIGH REVENIO 5 DISC £1,750

No lightweight, but still a good ride

About the bike

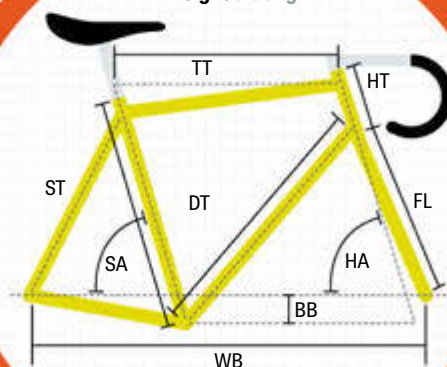
Raleigh's range-topping Revenio collection has proved hugely popular in the *BikesEtc* office, with the £550 Revenio 1 scoring well in last issue's bike test and the £750 Revenio 2 impressing in the Brecon Beacons in issue four. But at a relatively wallet-busting £1,750, the Revenio 5 Disc is in a very different price range, and with disc brakes, it's a completely different animal altogether – so does it impress? We gave it a test to find out...



GEOMETRY

	Claimed	Measured			
			Head tube (HT)	165mm	165mm
Top tube (TT)	545mm	545mm	Head angle (HA)	71.75°	71.7°
Seat tube (ST)	510mm	510mm	Seat angle (SA)	73°	72°
Down tube (DT)		587mm	Wheelbase (WB)		994mm
Fork length (FL)		380mm	BB drop (BB)	70mm	70mm

Size tested 5
Weight 9.80kg





SPEC

FRAME

6061 butted aluminium, carbon fork, tapered alloy steerer

GROUPSET

Shimano Ultegra

BRAKES

Shimano hydraulic

CHAINSET:

FSA Gossamer 50/34t offset for 135mm

CASSETTE

SRAM 1130, 11-28

BAR:

RSP+ alloy

STEM:

RSP+ alloy

SADDLE

Selle Royal Sirio

SEATPOST

RSP+ alloy

WHEELS

Shimano WH-RX31

TYRES

Schwalbe Lugano, 25c

CONTACT

raleigh.co.uk

Frame

At £1,750, it's no surprise to see the Revenio built around an aluminium frame. Carbon is still pricy and the addition of disc brakes – especially hydraulic ones – requires significant additional design and engineering that will add to the cost. Discs are not simply retrofittable to any frame. So while you could spend £1,500 on a carbon-fibre Revenio 2 with rim brakes, the £1,750 model sticks

with aluminium, a tried-and-tested material. The tubing is butted to save weight and add strength, and the welds are reassuringly robust. Raleigh makes the Revenio aluminium bikes in nine sizes, to cater for riders from 5ft to 6ft5. We chose a size 5 for our 5ft 10in tester. Thanks to the way aluminium frames are constructed, angles often differ slightly to the claimed geometry – as welds cool, they shrink, so you can't guarantee that the tubes won't

shift. While any side-to-side deviations would be corrected by cold forging, back-to-front changes aren't so easy. So, seeing the seat angle on the Revenio is at 72 degrees rather than the claimed 73 isn't a huge surprise, but that doesn't mean it's welcome: Raleigh says its RE2P geometry shifts your weight back on the bike, taking pressure off your arms to reduce fatigue, but we're yet to ride a bike with this layout that truly inspires – you still



£1,800 disc brake bikes

We're big fans of Shimano hydraulic road disc brakes, especially as used here with 140mm rotors

need to weight the front wheel properly to get round corners safely, and once the speed goes above 15mph, the wind means you find yourself crouching towards the bars to reduce your frontal area, something bikes with laid-back geometry make more difficult.

Components

Shimano's hydraulic disc brakes are brilliant. In the past we've speculated that the mechanical-shifting version (as used here) are more powerful than the Di2 electric equivalent, with the mechanical locking up the rear wheel too easily. Well, here, with 140mm rotors, rather than the larger 160mm standard, we found no problems at all – we could still lock up the rear wheel, but there was a world of modulation on the way to that point.

Wheels

If you've looked at the geometry chart, you'll have noticed that the Revenio 5 is no lightweight. Comparing the wheel package here to that on the Cannondale CAAD10 (including quick-release skewers, cassette, tyres, tubes and disc rotors) we found the Revenio was carrying an additional 250g in its wheels. That's a significant chunk. The Schwalbe Lugano tyres performed adequately but are a downgrade from the advertised Duranos the bike is listed with.

The ride

Up close, the Revenio 5 looks great. Well, apart from the saddle, which looks like an oversight from one of the cheaper models in the range. It was a bike that on first glance we were really excited to ride; and then we picked it up. At a full kilogram heavier than the lightest bikes here, Raleigh has clearly sacrificed weight (most likely in the frame – although a lot is in the wheels too) to achieve a desirable parts package at a competitive price. By the time we'd added a bottle, cage and pedals, the Revenio had lost all pretensions of raciness. Setting the bike up was a breeze, and it was nice to see that the in-house finishing kit is an upgrade from the gear supplied on the much cheaper Revenio bikes we've tested previously. That said, a 90mm stem on a medium-sized bike feels a little short – a 100mm version would have been preferred. Shimano's hydraulic



brake levers feel great in the hand, and combined with 140mm rotors, provide a lot of useable modulation. We were fortunate to avoid wet conditions during our testing period, but given past experience, we know these brakes to perform impeccably, whatever the weather. Out in the lanes, the short, laid-back position didn't especially complement the confidence afforded by the brakes, and we never felt we were cornering fully on the limit. Frame weight tends not to be hugely noticeable on the road, but the wheel weight did make the bike feel sluggish when accelerating and climbing. On paper the Revenio 5 is a steal, and out on the road, it rides nicely. With a few changes to components, such as a lighter saddle, better tyres and a longer stem, it would be even better. But it would still be heavy. If you're a larger rider, that may well be to your advantage, but we felt the parts list here deserved a lighter, faster frame.

RATING

FRAME

Useful laid-back geometry but uninspiring

COMPONENTS

Shimano hydraulic brakes are truly excellent

WHEELS

The chunky wheels bump up the bike's overall weight

THE RIDE

Held back a bit by its weight but still a nice ride

OVERALL

7.7
10



The finish is first rate and the deep red looks incredibly luxurious in the flesh



By the time we'd added a cage and pedals, the bike had lost all pretensions of raciness

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Trek Domane 4.3 Disc

We've looked into our crystal ball, and the future looks a lot like the Trek Domane Disc



We started the test with broad minds – what should an £1,800 disc bike be capable of? How should it differ to a similarly priced bike with rim brakes? We just assumed that when we saw it, we'd know.

Having really enjoyed our time riding the Cannondale CAAD10 for issue six, we were looking forward to riding the disc version. But while it held its own, it didn't excite us in the way the Racing Edition had – with discs still being banned from road racing, this bike felt like a thoroughbred that didn't have a home to go to. Impressive, yes, and fast, absolutely, but ultimately it felt a bit disenfranchised from the reality of its non-racing environment. Likewise the Raleigh – which is overweight if very well specced for the price – never really lit up underneath us.

Both the Genesis and Saracen, despite being very different to each other, seemed to be pushing disc brakes in a more interesting direction. The Genesis is functional with a decent helping of fun on the side, while the Saracen is enjoyable, and surprisingly utilitarian. Given the materials are carbon and steel, the ride was unexpectedly similar.

Which takes us to the Trek. Admittedly, we've not tried the rim-braked version, but to us, everything about the Domane Disc looks like the future: bolt-thru axles, discs, and a new take on geometry that allows you to make the most of the brakes. This brilliant bike is a worthy winner of our test and, we believe, the shape of things to come.

HOW THEY STACK UP...



SARACEN AVRO
£1,800

CANNONDALE CAAD10
RIVAL DISC £1,800

TREK DOMANE 4.3 DISC
£1,900

GENESIS EQUILIBRIUM
DISC LTD £1,850

RALEIGH REVENIO 5 DISC
£1,750

FRAME

COMPONENTS

WHEELS

THE RIDE

OVERALL

8.2

8.4

8.9

8.0

7.7

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Hot under the collar

Raise your pasty arms to the sun and give thanks that it's finally summer. We try 11 jerseys that are perfect for building up your cyclist's tan



Say goodbye to softshell jackets, thermal base layers, rain capes, ear-warmers, lobster gloves, full-length tights and neoprene booties – the brief break in the rain that passes for the British summer is here! With summer being your only opportunity to look remotely normal or stylish while riding, why not treat yourself to a new summer jersey?

Something in lightweight, breathable fabric is sensible on warm days, and a full-length zip is essential for a fully pro look. Either at half mast or totally undone, it'll not only help keep you cool while grimacing up a sweltering climb but also allows your jersey to flap theatrically behind you, giving spectators a view of your sweaty torso. Don't forget your sunscreen – plus a couple of quid for a beer and an ice cream, of course. ➡

↓ Castelli Aero Race 5.0 £100

You either get Italian things or you don't. Ducatis, Ferraris, Alfa Romeos... You're buying the passion, the style, the look etc, rather than value for money or sensible colours. The same goes for 'Italian sizing' in cycle clothing – while we're a small in most brands, we're a large in Castelli. Still, the Aero Race 5.0 is comfortable to wear on the bike, and thanks to the super lightweight material, wicks sweat away from the body well. Castelli says it's 12 watts faster than a standard jersey but more important than numbers is feel, and because it's Italian it makes you look and feel awesome.

castellicafe.co.uk

Rating

CONSTRUCTION
COMFORT
VALUE

OVERALL
8
10



→ Gore Element X £60

Fans of Marvel superheroes will like this as from a distance it looks like you're up for a role in the next *X-Men* movie. While it can't fortify you with superpowers this reasonably priced garment boasts a three-compartment back pocket including an integrated security pocket for valuables. It feels light yet robust, slim without being too tight (our tester found the large size comfortable) and despite its breathability (sweat is quickly wicked away from the body) when coupled with arm warmers, the Element X happily handles drops in temperature caused by big black clouds blocking out the sun.

goreapparel.co.uk

Rating

CONSTRUCTION
COMFORT
VALUE

OVERALL
7
10



→ Cannondale Performance 1 £80

Wearing this jersey on a group ride, a few of our fellow riders picked up on the poppers in the hem – a nifty 'system integration' feature designed to keep the jersey in place even with the zip open. 'Ooh, that's a good idea,' was the general verdict – though you have to wear the matching shorts to benefit. The slim 'pro' cut is still comfortable for normal humans (the medium was a good fit for our average-sized tester) and incorporates strategic mesh panels for breathability. As well as the traditional three rear pockets, there's a zipped, waterproof media pocket and the vibrant green colour scheme looks rather smart too.

cyclingsportsgroup.co.uk

Rating

CONSTRUCTION
COMFORT
VALUE

OVERALL
8
10



← Sportful R&D Ultralight £85

As you slog up a sweltering mountainside, the lactic agony slowly building in your quads, the prickly heat will only highlight any annoying features of your kit, exacerbating any chaffing or imperfections in the fit. To counter this, Sportful has stripped as much as possible from its R&D Ultralight jersey. Its sleeves end in a raw, un-hemmed cuff while the elasticated bottom and minimalist collar are equally unobtrusive. The extremely lightweight honeycomb fabric contains a minimum of Lycra to aid evaporation, while offering decent UV protection. A barely there jersey for the hottest of days.

c3products.com

Rating

CONSTRUCTION	
COMFORT	
VALUE	

OVERALL
9/10



← Lusso Pro Carbon £60

The makers of the Resistex Carbon material used in this jersey make some pretty bold claims about the heart-rate-lowering, fatigue-busting qualities of its carbon filament infused antistatic fabric. Lusso's website keeps it simple, instead pointing out its UV blocking properties – something you'll appreciate if you saw the pic of Chris Froome's severe sunburn after wearing a mesh jersey on a training ride last year. It's not the lightest jersey but the three porous fabrics that constitute its multiple panels do an excellent job of wicking moisture away, keeping the wearer cool and dry – something further aided by its white colouring. The broad bands that ring the cuffs and bottom of the jersey keep it locked in position.

lusso.bike

Rating

CONSTRUCTION	
COMFORT	
VALUE	

OVERALL
7/10



↑ Odlo Telegraphe £80

Norwegian brand Odlo was established in 1946 so should know a thing or two about functional sports wear. And sure enough, the Odlo F-Dry fabric is breathable and wicks away moisture well, plus the minimal branding and deep blue colour make a nice change compared to some of the garish, heavily branded alternatives out there, but apart from that, it's slightly disappointing, especially for 80 quid. Its utilitarian cut suggests its use is more general than say, race specific, and the material isn't the hardest wearing – our tester found it had bobbed after sitting under the strap from a shoulder bag on a 45-minute commute ride.

wiggle.co.uk

Rating

CONSTRUCTION	
COMFORT	
VALUE	

OVERALL
6/10

↓ Adidas Adizero £100

Weighing 65g this is a preposterously minimalist jersey (see p14 for the matching shorts). It uses a unique mesh fabric on the sides and an ultra-thin material on the front panels that gives it a crumpled appearance until you pull it on, when the form-hugging fit means it should be fairly aerodynamic too. Not for the bashful, the gossamer fabric is on the exhibitionist side – a slipped bibstrap could easily leave you revealing more than you bargained for. Surprisingly normal feeling once on, the design manages to squeeze in two miniature pockets and a full-length zip.

adidaspecialtyssports.co.uk

Rating

CONSTRUCTION
COMFORT
VALUE

OVERALL

7

10



BikesEtc
BEST
IN TEST



STASH AND GRAB

Four essentials for the genteel jersey pocket.

Bellroy Elements Pocket wallet, £65

Slimline wallet in treated waterproof leather with a rubberised zipper. Good for keeping your cash dry.

bellroy.com



Rapha Essentials case, £45

Shaped to fit a jersey pocket, this leather case isn't totally waterproof but still more than a match for sweaty backs.

rapha.cc



LifeProof phone case, around £70

LifeProof's stylish waterproof and shockproof cases aren't only great for cycling, they could save you from an expensive repair bill.

lifeproof.com



Bassetts Jelly Babies, £1.49

Win friends with the archetypal cycling sweet. Unlike chocolate, they won't melt – and unlike energy gels, you'll actually want to eat them.

→ Craft Glow £65

Less severe in its fit than some jerseys, the Glow will suit humans whose attitude to diet and training is correspondingly relaxed. It's not slouchy, just thoughtfully cut, and its soft, loose cuffs do without silicone grippers, ensuring there's no constriction or chaffing. A wicking fabric and mesh panels under the arms help keep the rider cool. Not trying to be the most aero or compress various bits of your anatomy has allowed Craft to concentrate on making a superbly comfy jersey. A zipped pocket and reflective dot patterning round out the design.

craft.se

Rating

CONSTRUCTION
COMFORT
VALUE

OVERALL

8

10



← Alé PRR Ponente

£90

While not the lairiest jersey in our selection, the Ponente's simple but striking design certainly gives it a dash of Italian flair. Definitely one for hot days, its front panels are made of ultra-lightweight perforated material to let cooling air in (no need to ride with the zip open), while the back is more substantial (for sun protection) yet impressively breathable. Fit is properly Italian (ie tiny) but with plenty of stretch so it's very comfortable – but we'd recommend going up at least one size from normal. The zipped pocket is big enough for a smartphone but offers no sweat protection. Still, for performance and style, it's a great choice if you're riding somewhere hot this summer.

paligap.cc

Rating

CONSTRUCTION

COMFORT

VALUE

OVERALL

9

10



← Pearl Izumi Pro LTD Speed

£90

An excellent aero option, the LTD's great cut ensures a minimum of excess material. With the full-length zip done up to the throat, the front sits absolutely flush against the chest, but this form-hugging fit is never constrictive thanks to multiple panel construction and low-profile, flatlocked seams. The Coldblack material does a commendable job of reflecting the sun's rays and keeping the wearer cool, but if you do end up sweating, at least your phone will remain safe in the internal sweatproof pocket. The three conventional pockets continue the wind-cheating theme with low-profile openings, while the dimpled fabric supposedly further smooths out turbulence.

madison.co.uk

Rating

CONSTRUCTION

COMFORT

VALUE

OVERALL

7

10



BikesEtc
BEST
VALUE



↑ Poc Essential

£145

This is part of POC's AVIP (attention, visibility, interaction and protection) range and at least two of those elements are immediately obvious – our tester had a fellow rider asking for sunglasses. Its mix of 3D stretch fabric through the shoulders, and 4D stretch fabric in the body give a perfect fit for an aggressive riding posture. The material is oddly cool on the skin and multiple pockets – including one away from the body for a phone – make this ideal for long rides on a hot day, though the price may stop some in their tracks.

2pure.co.uk



Rating

CONSTRUCTION

COMFORT

VALUE

OVERALL

7

10

ALL THE GEARS

Planning an upgrade to 11-speed or building a bike from scratch? We put the entry-point 11-speed groupsets from Shimano, Campagnolo and SRAM to the test, to help you choose



If you want a job done properly, do it yourself. It might sound churlish, but when it comes to choosing a bike, very often the compromises involved with buying off the peg are just too great, so going it alone – spec'ing each part around a frame of your choosing – makes a lot of sense. It also opens up a whole world of frame choices, such as the Kinesis Aithein we tested back in issue six, or the Niner RLT we reviewed in issue two – great frames that require your input.

The groupsets here are the entry-level 11-speed options from Shimano, Campagnolo and SRAM. By shopping around, you should be able to build a bike from scratch with any of these for under £2,000, using a really nice frame and fork; if you already own a nice bike with a cheaper groupset, this is the best way to upgrade. Either do it yourself (you'll need bottom bracket and chain tools, cable cutters and potentially some new allen keys) or work with your local bike shop to get the parts installed professionally.



Brakes	Weight: 312g Price: £92
Brake levers	Weight: 336g Price: £198
Crankset	Weight: 876g Price: from £153
Cassette	Weight: 296g Price: £80
Front derailleur	Weight: 89g Price: £29
Rear derailleur	Weight: 191g Price: from £46
Chain	Weight: 248g Price: £37
TOTAL	Weight: 2,348g Price: £635



SRAM Rival 22 £635 fisheroutdoor.co.uk

DRIVETRAIN

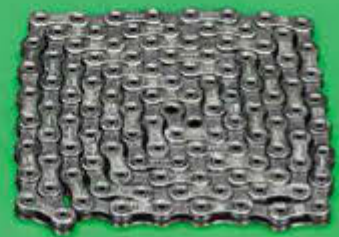
The sheer number of drivetrain options is where Rival really shines. The chainset is available with either a normal 24mm GXP or a modern BB30 axle, with bottom brackets to suit. Chainrings are available in 50/34, 52/36 or 46/36 formats (the last of these being the cyclocross standard), and by the time you read this, a 1x11 version – Rival1 – will be available, which does away with the front mech in favour of a single chainring and a wide-range cassette. The PG-1130 cassette most closely tied to the Rival family is available from 11-26 up to 11-32, and as an 11-36 version to use with the special 1x11 Rival rear mech. Upgrade to the Force-level 1170 cassette and that's available in 11-25, 11-26, 11-28 or 11-32. SRAM's cassettes use the same spline pattern as Shimano, so as long as your wheels are 11-speed compatible, you can use SRAM and Shimano cassettes interchangeably. The Rival 22 rear mech is available in two options – either short cage or a medium cage 'WiFLi' version for the 11-32 cassette (short cages don't have enough movement for wider ranges such as 11-32, so make sure you pick the right one). It's easy to set up – far more so than the front mech. However, once set up, the front mech performs faultlessly – the Yaw cage ensuring the plates rotate with the chain between small and big rings. Just don't try to set it up as you would a normal front mech – get on YouTube and follow SRAM's instructions. It'll save a lot of swearing! (Essentially, you set it up on the big ring, then adjust back from there.)





BRAKES

Rival is the only groupset here that is currently available in a hydraulic version – it's featured on the Cannondale CAAD10 disc brake bike that we review on p82. Here, though, we're testing the standard rim brake version, which comes complete with dual-pivot callipers. They work well, though the Shimano alternative feels slightly better to us in terms of cable pull and modulation. Where they really excel, though, is weight – nearly 75g less per pair than Shimano 105, and the pads – made by SwissStop – are great.



SHIFTERS

SRAM arrived late to the road bike party, and by the time it launched Red, its first groupset, the obvious ways of integrating gear-shifting into a road bike brake lever had been patented by Shimano and Campagnolo. To get around the legal issues, SRAM came up with the ingenious DoubleTap system: push once to drop down the cassette, push on through to shift up the cassette and into an easier gear. It's a system that raised eyebrows at first, and is still met with an element of scepticism among riders who are yet to try it. The reality is that within two or three rides, all memories of lost love have been banished and you fall into sync with DoubleTap. That said, it's definitely clunkier than the other systems, and the force required to shift is noticeably higher. On the plus side, the ability to adjust brake and shift lever reach is a welcome addition – and a genuine advantage for riders with smaller hands.



OVERALL

Rival appeals to us largely for the sheer number of options available. If you buy a frame with a BB30 or pressfit bottom bracket – increasingly common standards – by going with SRAM, you can use the chainset that was intended by the frame builder. Then there's the huge array of gearing options, from a single ring and tightly spaced cassette to two rings and an 11-32 cassette that would be perfect for fully laden touring. The shifters are comfortable and the brakes work perfectly, but they don't quite have the lightness of touch of 105, although what they lack in lightness of touch, they make up for with lightness on the scales – a 75g saving over 105 is not to be sniffed at.

Rating

BRAKES
DRIVETRAIN
SHIFTERS



Shimano 105

£496 madison.co.uk

BRAKES

Shimano's new style brakes employ a dual-pivot mechanism with both pivots placed either side of the tyre, rather than one being placed centrally. The benefit of this to the rider is both a reduced size calliper but – more importantly – a more linear response for increased power. It also means Shimano can offer this brake as a direct mount option for aero frames, where the rear brake is positioned under the seatstays. While you can use these callipers with any shifters, they work best with Shimano's 105, Ultegra or Dura-Ace STI levers, which pull the correct amount of cable to ensure good power and modulation.



Brakes Weight: 388g Price: £70

Brake levers Weight: 489g Price: £180

Crankset Weight: 756g Price: £120

Cassette Weight: 272g Price: from £40

Front derailleur Weight: 89g Price: £27

Rear derailleur Weight: 228g Price: £37

Chain Weight: 265g Price: £22

TOTAL Weight: 2,487g Price: £496



SHIFTERS

The 105 11-speed shifters are far more slender in the hand than the previous 10-speed generation and they feel both supremely comfortable and surprisingly secure – you never worry about sliding off them. Replacing cables is easier too, thanks to the gear cable entering from the side. The cables themselves are surely responsible for the incredibly light shifting feel – all the friction of previous incarnations has disappeared to be replaced by a super-light feel reminiscent of old external cable systems. Replacement cables aren't cheap, though, at £30 for a set of low-friction outers and polymer-wrapped inners.





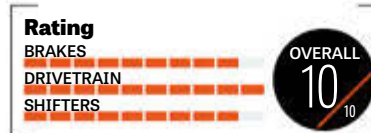
DRIVETRAIN

The new 105 chainset is a real work of art. From the outside, it looks much like the Ultegra or Dura-Ace versions; flip it over and you'll see it also sports much of the same detailing, with heavily machined chainrings designed to boost stiffness, improve shifting and save weight. We've spent most time on the 52/36 version, which is a brilliantly versatile combination. It's also available in standard compact 50/34 or 53/39 variants (all have the same bolt circle so rings can be swapped easily), and in either light or dark grey (pictured). Triple chainsets aren't included in this incarnation of 105 (good riddance – 11-speed and a 34-tooth small chainring offer plenty of get-out-of-jail options) and it's only available with a standard 24mm axle – if you want to use a BB30 bottom bracket, you'll need adaptors. If, however, you're using a frame with a standard threaded BB, you're in luck: the Shimano external bottom bracket design is the most reliable out there. The cassette is available as 12-25, 11-28 or 11-32 – quite a small selection but you can always spec an Ultegra cassette if you want something different. If you have an old pair of 10-speed wheels you'd like to use on a new build, we're sorry but you can't – the additional sprocket means a wider freehub body, so you'll need to ensure your wheels are 11-speed compatible. The rear mech is the only component of the groupset that looks more in keeping with 105's budget price tag. It's functional rather than desirable, but it works well and is available in either medium or short cage options – the short version allows up to a 28-tooth largest cog at the back; the medium cage version is needed beyond that. The 105 front mech is the real revelation of the group: it's an engineering marvel that shifts quicker than any previous iteration – or any of its competitors – once set up properly. Absolutely faultless.



OVERALL

You could save weight over 105, but for the price, it's hard to see how Shimano could produce anything better than this. It changes gear, transfers power and slows you down brilliantly, and while ongoing maintenance costs are more than previous versions (mostly cables – chain longevity seems about the same) it's still a bargain. Frankly, we'd struggle to justify paying more for a mechanical groupset.



Campagnolo Athena

£691 campagnolo.com

BRAKES

Campagnolo has an interesting take on brakes, offering the Athena 11 groupset with either dual-pivots front and rear, or, for a combination of dual-pivot front, single-pivot rear. Single-pivot brakes are rare these days on road bikes, since they offer less absolute power than dual pivots, but the trade-off is better modulation. We've ridden both set-ups and found plenty of power with both – the vast majority of braking force is applied through the front wheel, so leaving that front brake unchanged across both set-ups means the actual slowing distance remains relatively unchanged. Modulation is good in both set-ups too – powerful, with no noticeable flex from the heavily machined arms, and with high-quality pads as standard.



Brakes Weight: 324g Price: £90

Brake levers Weight: 373g Price: from £190

Crankset Weight: 764g Price: from £136

Cassette Weight: 277g Price: from £113

Front derailleur Weight: 92g Price: £33

Rear derailleur Weight: 211g Price: £93

Chain Weight: 255g Price: £36

TOTAL Weight: 2,296g Price: £691

SHIFTERS

Campagnolo offers Athena with either alloy or carbon shifters. We ended up with the lighter carbon ones for this review, having previously used the alloy versions on numerous test bikes. Campagnolo has been in the integrated gear shifter/brake lever game since the early '90s so it's no surprise to find a refined, European-made product here. To shift into an easier gear at the back, you swing the large paddle that sits behind the brake lever; to move up as many as three sprockets at a time. Dropping back is done one at a time using a thumb shifter on the inside of the lever. Coming from SRAM or Shimano, the shape of the brake lever does take a couple of rides to get used to – it's dramatically curved and we often find our fingers reaching for the deepest recesses of the levers when braking from the hoods, which feels odd. Braking in the drops, however, feels fantastic from the start.





DRIVETRAIN

Campagnolo persisted with (beautiful) square-taper cranks for longer than most, but have since moved to an external-bearing bottom bracket system – in this instance, Power Torque, which has a full-length axle bonded to the drive-side crank. Campag also uses a system called Ultra Torque where, uniquely, the cranks join in the middle of the frame (Power Torque is far closer to the systems Shimano and SRAM use). The chainset as a whole is less refined than the Asian offerings, but shifting is still good, and the traditional look will undoubtedly appeal to many. It's available in traditional 53/39 rings, or compact 50/34 or 52/36 configurations. Crank lengths are 170, 172.5 or 175mm. Athena shares its cassette and chain with Campagnolo's more expensive Chorus groupset. There are seven cassettes available, from the intensely racy 11-23 to a more human 12-29. It's worth noting that if you intend to switch to Campag, you need to use wheels with a Campag-style freehub body – it uses a different spline pattern to the Shimano and SRAM systems. There's nothing much clever about the front or rear derailleurs, and that's no bad thing, for they shift gear quickly and confidently with minimal fuss. The weight for all these parts is right in between Shimano and SRAM; the only issue is the price – at least at RRP.



OVERALL

It's hard not to feel a certain fondness for Campagnolo – performance is charmingly unobtrusive, and on certain frames, say a classic steel Colnago, it really would be sacrilege to spec anything other than an Italian drivetrain. There's more at play here than romance, though, and performance is absolutely comparable to SRAM and Shimano, with ergonomics a particular strong point. The shifters, for instance, might feel different at first, but by the time you're out into the lanes, you'll have become accustomed to the curve of the brake levers and begun to enjoy the easy opposing thumb and forefinger shifting up and down the block. The other advantage to Campagnolo – and we'll admit this is perhaps pure vanity – is exclusivity: Campagnolo is specced as standard equipment on so few bikes that being a Campag user marks you out as a connoisseur who has gone to the trouble of building their own machine from parts. For many, that alone is worth a lot, but even judged on its performance rather than aesthetics, Athena holds its own. 



Rating

BRAKES
DRIVETRAIN
SHIFTERS

OVERALL
9
10

THE
ROOF
BOX
COMPANY

Bike Carriers

Expert advice ✓

Huge choice ✓

Fast UK delivery ✓



Atera STRADA DL
Tow bar bike carrier

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07744 Wall Mount
without clamp head



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without clamp head



Portable Stand
07741 with clamp head
07742 without clamp head



07746 Tool Tray
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SOX APPEAL

Much maligned as the gift choice of the habitually unimaginative, socks can add a flourish to otherwise pragmatic cycling attire

Here at *BikesEtc*, we never turn our nose up at a decent pair of socks. Whether out and about or out on the bike, socks not only keep your toes happy and your shoes from stinking, but are also a great way to secretly stick it to The Man. Like Jon Snow's ties, they can be a cheeky little flash of personality in an otherwise uniform setting. Here are 11 strong pairs for the sartorially minded cyclist.



Maglianera Fade £15

The seamless toe enclosure of these fluoros keeps your pinkies comfy while the arch support afforded by an elasticated middle offers enough compression to feel fitted, without giving your feet claustrophobia. They come in a waterproof case that doubles as a handy phone case.

alwaysriding.co.uk



Giro HRC Team £17

Developed with feedback from Team Katusha, Giro claims these are 'the ultimate socks for training or racing' – and for this price you'd expect them to be. The compression fit is instantly noticeable. With their antimicrobial silver micro particles, presumably Katusha's tour bus is one of the fresher-smelling on the pro circuit.

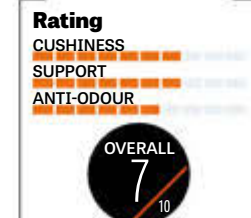
zyro.co.uk



Rapha Pro Team Long £15

These super-comfy mid-weight socks wouldn't look out of place slipped into a pair of brogues. You'd be hard pushed to tell the synthetic fabric apart from traditional cotton or wool, and despite their thickness, they're extremely breathable while still standing up well to repeated wear.

rapha.cc





Attaquer Bandits £15

With precious metals continuing to prove a solid investment, these socks provide first-rate insurance against both economic uncertainty and foot odour, thanks to the antimicrobial silver yarn visible within the lining which helps them remain fresh-smelling, even after multi-day usage. kinokostore.com

Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
8/10

Morvélo Series Emblem Fluro £9

High-tops with compression powers. Ribbed uppers and support bands around the arch keep everything snug, while porous top panels keep toes cool. Tighter than Morvélo's other socks, like most anti-odour fabrics, our rancid feet overpowered their abilities. morvelo.com



Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
7/10

Features! Elite Ultra Light £14

Packing in more tech than seems decent for a humble pair of socks, these woolly numbers were originally designed for running. Their left/right anatomical design is close-fitting. A tight cuff and arch support mean they transfer seamlessly between cycling and running. Perfect for triathletes. featuresrunning.com

Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
9/10

Prendas Coolmax La Vie Claire £6.50

Wearing team kit can be a contentious issue, so pay a subtle tribute to your favourite team of yesteryear. These Mondrian-inspired La Vie Claire socks are particularly lovely. Besides the Coolmax fabric there's not a lot of tech going on, but they're a perfectly comfy. prendas.co.uk

Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
5/10

Ornot Pave £15

A custom high-top version of DeFeet's Aireator, these socks claim to provide an additional inch of fun, and who doesn't want that? The answer: cycling sock purists. The designers at Ornot may have allowed riders to up their #sockgame by 25%, but you'll have to pedal against convention to take advantage of this improved performance. alwaysriding.co.uk

Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
6/10

Morvélo Display £9

Proof that you don't need fluoro to catch the eye, these lightweight summer socks live up to their name. Their SkinLife and Coolmax fabric blend promises antibacterial protection (for more than 100 washes) and good breathability, the latter enhanced by the mesh-like top panel. morvelo.com

Rating

CUSHINESS
SUPPORT
ANTI-ODOUR

OVERALL
7/10

THE LONG AND THE SHORT OF IT

Along with helmets and segregated bike lanes, sock length is one of the most heated topics in cycling circles. Make sure you get it right



LOW

Before you could link Strava accounts to Facebook, ensuring your entire social circle is alerted every single time you work out, tan lines were a key indicator of cycling prowess. Razor-sharp lines take hours in the saddle to cultivate, making the flaunting of them before a race the perfect psych tactic to dispirit your rivals. How will you get tan lines if your socks don't sit outside your shoes?



MID

Ah, the happy sock medium. Neither too high nor too low. Since time began, this has been the immemorial choice of the discerning cyclist. Bonus points are to be awarded for keeping them white and avoiding the temptation to adorn them with jazzy designs. Any logos should match the rest of your kit. Clean, simple, yet dazzling. Make the right choice.



HIGH

More than the lies and cheating, what really enraged fans about Lance Armstrong was his hideously long socks – a big, tasteless American F-off to traditionalists. While moral rehabilitation remains elusive for Big Tex, stylistically he's edging towards vindication, as over the past few years the peloton's collective cuffs have edged ever further up their shins. Say it ain't so!



DeFeet, Aireator £9

We were particularly taken by these polka-dot numbers. With no added padding, there's no danger of your pinkies getting sweaty, while the super-permeable mesh upper panel lets the breeze circulate between them. Happy being bunged in with a hot wash, they should last many a summer.

i-ride.co.uk

Rating

CUSHINESS

SUPPORT

ANTI-ODOUR

OVERALL

6/10



DeFeet Cyclismo Wool £17

Nice looking and perfect for secret scumbags, since they're happy to be worn for days without washing – thanks to merino wool's antibacterial properties, they're a favourite with touring cyclists. Excellent wicking keeps them comfy in a range of temperatures and they stay warm even when damp.

i-ride.co.uk

Rating

CUSHINESS

SUPPORT

ANTI-ODOUR

OVERALL

9/10



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Cyclist
MAGAZINE



BAG IT UP

If you're taking your bike on holiday, ensure it travels in first class, even if you don't



Getting off the plane at your holiday destination to find your bike damaged is a rubbish way to start any trip. While a cardboard box scrounged from a bike shop will offer some rudimentary protection, if you regularly take your bike abroad, you'll save yourself a lot of potential hassle and heartbreak by investing in a proper travel case.



B&W Bike Box

£245 Weight: 12.6kg

With a combination of aluminium and impact-resistant ABS plastic, this box provides excellent protection at a surprisingly affordable price. As a long-time travel companion of the *BikesEtc* team, it's racked up thousands of air miles without sustaining any serious damage, just like the bikes we've carried inside. There's not a lot to the Spartan interior. Both sides are padded with detachable sheets of soft foam, while the case comes supplied with a pair of removable padded wheel bags. A dense foam support keeps the chainring from sustaining damage or digging

into the base while a pair of parallel straps keeps both wheels and frame pinned to the sides. Simple plastic spacers reinforce the fork and rear triangle. Flat sides and minimal height and width means you won't need to rent a car with an enormous boot in order to continue your journey. The clamshell design has an aluminium lip with four separate integrated locks, while a large Velcro strap provides a final layer of security. Easy wheeling and the change left in your pocket make this box our value winner. roofbox.co.uk



Rating
PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
8/10

Saturae Travel Case

£400 Weight: 6.53kg

Fairly similar in design to the Scicon AeroComfort 2.0 (see next page), a 2.7kg weight difference in favour of Saturae's bag is largely down to it employing an aluminium rather than a steel sub-frame. It lacks some of the neat details of the Scicon, like the reinforced guards that protect the wheel axles, the anti-tear reinforcement to the bottom of the case and the more rigid underpinning of the sub-frame. These little touches really do add up to the overall finish of the product: the lack of roller bearing in the wheels, for example, is likely to limit their durability, and we'd much rather pay a small weight penalty for a sturdier steel frame, rather than the Saturae's lighter but somewhat more flexible aluminium base. The removable wheelbags are a very nice touch though. With either design, we were slightly concerned about its ability to protect the bike compared to the chunkier and more rigid bags, but superb ease of packing means that this style will



certainly still have its fans. Ultimately, if you go for this style of case, we'd pick the sturdiness and features of the Scicon, though the lighter weight of the Saturae case may factor into your decision.

paligap.cc

Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
6
10



Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
5
10

Decathlon Bike Cover

£40 Weight: 2.58kg

There's very little to this offering from Decathlon. The fact that it's described as a cover rather than a case should give you a clue as to the level of protection, making air travel with this bag a prospect we wouldn't necessarily relish. However, with a bit of cardboard reinforcing, a few lengths of pipe lagging and some careful packing, it could be a serviceable lightweight option. While other cases will lumber you with another piece of equipment to lug around once you reach your destination, Decathlon's bag folds down into its own small carry case – and it's minuscule enough to carry in a pannier or backpack, so you can ride from the airport. It's also ideal for train operators that won't let you take a bike on a train but are happy to allow bike-sized items of luggage. Weighing very little, it still manages some additional protection in the form of a rigid sleeve that unfurls to reinforce the base of the bag, plus some rudimentary dividers for the wheels.

decathlon.co.uk

PROTECT YOUR ASSETS

Cycle insurance provider yellowjersey.co.uk on how to avoid transit-related maladies



Unlike companies serving the commuter market, around 80% of our claims relate to accidental damage rather than theft.

The most common transit damage claims relate to either the rear derailleur or wheels, and are usually caused by a combination of 'robust' baggage handling, using cheaper boxes or bags and bad packing. We also see secondary crash damage caused by incidents in transit, such as the rear hanger being bent, and although the bike seems fine at first, later,

the derailleur goes over the cassette limit and through the spokes.

If damage does occur in transit, be quick, because if you leave the airport before notifying the airline, most won't accept responsibility.

A big worry when travelling with your bike is the heart-sinking feeling you get watching the carousel stop only to realise your bike isn't there. Carrying your helmet, pedals and shoes in your hand luggage at least means you can rent a replacement bike – and if you're a Yellow Jersey customer, you can claim back the cost.



Insure your bike, just in case



Evoc Bike Travel Bag Pro

£400 Weight: 8.2kg

Better known among mountain bikers, Evoc's premium travel bag is great for roadies. Its rigid base features an adjustable pedestal on to which you strap the bicycle, ensuring the chainring and rear derailleur won't be damaged against the floor of the case. Once removed, the bars and stem attach to a sling that spans between the top and downtubes, before the entire bike is lashed to the base. A separate holster that butts up against the front of the case ensures the fork is protected and secure. Externally accessible padded wheel bags are built into the side of the case and include integrated shields for disc rotors. This makes it ideal for disc-equipped roadies or those who like to dabble with chunkier tyres, although annoyingly, the adaptor that's designed to swaddle road bike forks doesn't have space to accommodate a disc calliper. The rigid structure and smooth rolling wheels make it one of the easiest cases to

manoeuvre once packed. On a recent trip to the wilds of Bhutan, our bike survived being bottom of the pile during a gruelling pick-up truck transfer along unpaved roads without a scratch. silverfish-uk.com

Rating

PROTECTION

CONSTRUCTION

PACKABILITY

OVERALL

8

10



PRO Travel Case Mega

£350 Weight: 8.7kg

Strapped into the bottom of the Mega is a removable sled with two adjustable supports that suspend your bicycle off the base, protecting it from impacts. These supports not only brace the frame and fork but also provide neat retention for the chain, stopping it from greasing up the inside of the case. The sled being fully removable from the bag means you can disassemble your bike and prep it in the frame easily before stowing the whole assembly in the outer case. Adjustable bumper pads provide additional protection to sensitive areas such as around the dropouts, while two padded external pockets house the wheels. Their placement should protect the more delicate components inside, although if you've got particularly fragile hoops, you might want to add some extra padding. Not quite as robust or rigid as some of the more expensive cases, there's still plenty of protection on offer while the lower weight and smaller pack size will win it fans. madison.co.uk

Rating

PROTECTION

CONSTRUCTION

PACKABILITY

OVERALL

7

10



Biknd Jetpack

£370 Weight: 9.62kg

The solid aluminium frame in the base of the Jetpack is easily adjustable and comes with plenty of adaptors, meaning it'll securely hold your frame regardless of what axle standards it uses. Like its bigger and more expensive sibling, the Helium, the Jetpack relies on integrated air cushioning for protection. This takes the form of two inflatable circular shields. After a bit of puffing on your part, they slot into holsters outboard of the wheels. These are then lashed in place via chunky shields that slot directly into the axles, ensuring they can't damage other items in the case. While the inflatable cushions would definitely make excellent beach toys once you reach your destination, previous experience has taught us to treat them carefully so as not to get that deflating feeling. Finally, hidden behind another layer of padding (unlike some MTB-compatible designs), your comparatively frail road wheels should be well looked after. The narrower sides and top of the case are made of fairly rigid, foam-backed material that although tough can be folded down for a small pack size.

extrauk.co.uk

Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
7
10

Scicon AeroComfort 2.0

£375 Weight: 9.26kg

The AeroComfort's USP is how quick it is to pack. Pop off the wheels and pedals and you're almost done. Once the dropouts are bolted into the robust steel frame in the base of the bag, a roll cage protects the mech. And this means that when you reach your destination, you'll be up and rolling while your friends are still scrabbling around trying to find the right size allen key. With both front and rear dropouts secured to the internal frame, it's just a case of lashing down the bike with the included webbing straps. A few lengths of pipe lagging seem out of place in such a premium-priced bag but they provide easily customisable and high-density padding. While it doesn't provide the protection of the most heavily padded bags, its lower weight, four pivoting roller wheels, easy packability and low storage size all count in the Scicon's favour.

saddleback.co.uk



Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
7
10



BikesEtc
BEST IN TEST

Bike Box Alan Premium Bike Box

£415 Weight: 12.18kg

There's a series of videos of the eponymous Alan testing these boxes on his website that's well worth checking out. First he chucks the box off a bridge, then he bundles it out of a speeding car, before finally getting his mates to try to finish it off by blasting it with a shotgun. We really didn't want to upset this man with a bad review! Luckily, this box is every bit as robust as his testing makes out. Made of seemingly indestructible plastic, it strikes the balance between rigidity and strength. Jumping up and down on this box proved how tough it is, with the edges flexing slightly but the middle remaining rock solid, thanks to a removable anti-crush pole. Even with multiple items piled on top, your bike is unlikely to be squished. A plethora of Velcro straps inside the case provide rock-solid retention, even for oddly shaped frames and components, including bikes with fixed seatposts. Sitting in wells on the outside of the case, the wheels are separated from the rest



of the bike by a full-length foam pad. The only down sides are the weight and its slightly portly size that can't be folded. However, if you've got the money and the space, there are few more secure options. bikeboxalan.co.uk

Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
9
10



Thule RoundTrip Pro

£495 Weight: 10.53kg

This is a bag with two very neat tricks up its sleeve. First, the semi-rigid sides provide good protection along the entire length of the bag. Unlike simple padding, they'll spread any impact over a wider area, lessening the chance of damage to your bike. The clever bit comes once you remove this reinforcement, which slips out of the case and folds down flat into the base. This allows you to collapse the whole assembly, so it requires a minimum of storage space when not in use. The second and even more impressive feat is that the base and reinforcing spars of the case detach to form a high-quality work stand. Once disassembled, the piece that forms the top of the stand remains attached to the bike's fork and bottom bracket. At the push of a button, this assembly can be transferred from the stand to the case, protecting the bike's undercarriage and making loading the case extremely quick. Not cheap, but with the workstand being nice enough to use on its own, this would be a good investment. madison.co.uk



Rating

PROTECTION
CONSTRUCTION
PACKABILITY

OVERALL
8
10

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purpleharry.co.uk

POST-MODERN

There's plenty of self-inflicted suffering to be had in cycling, but there's no reason why your bike should be adding to it



Comfort isn't the opposite of speed – something both athletes and bike designers are getting wise to. Not only is cycling more enjoyable when your bike isn't beating you up, limiting the vibration means you can potentially ride further and go faster – and your seatpost can play a big part in this. The posts tested here are designed

to pamper your posterior by dampening shocks transmitted from the road, reducing the potential causes of lower back pain and numbness, and helping you arrive less fatigued. Which is equally useful whether your destination is the next café or the final sprint for the line. Note that all weights given are for the 27.2mm size, except the Storck.

Syntace P6 HiFlex

Weight: 235g

Sizes: 27.2, 30.9, 31.6, 34.9mm



There's not much to choose between this and the posts from Niner and Storck (see next page). All are exceedingly comfortable and work in a similar way, in that the more post you leave poking out of the frame, the greater the flex effect will be. One key difference with the Syntace is its elliptical bore, designed to place more material where it's needed while removing it from areas subject to less stress. Syntace calls this 'load-oriented material distribution'. It also has a few other tricks to justify its high price, including an excellent saddle clamp, with an extra-wide lower section to support the rails. Titanium hardware and a 10-year warranty suggest this seatpost is built to last.

o-w-d.nl

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL

9

10

Cane Creek Thudbuster ST

Weight: 452g

Sizes: 25.4, 26.8, 27.0, 27.2, 30.9, 31.6, 33.9mm

You're sure to attract comment if you turn up to a club ride with one of these on your bike. Its hinged parallelogram structure houses an elastomer damper, giving 33mm of suspension, and with changeable inserts catering to different rider weights, it's possible to tune the post's compression characteristics. It feels surprisingly normal to ride, with less of a floating sensation than we expected. It's stable while pedalling, and we found that shifting our weight forwards on the saddle, as when reaching for the drops, reduced the compression, allowing us to hammer away on the pedals without causing the seat to bob up and down. Its sturdy construction gives us few concerns as to its long-term durability.

extrauk.co.uk

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL

7

10



Storck MLP150

£220

Weight: 212g Sizes: 31.6mm only

Carbon maestro Marcus Storck is famous as a frame builder but has his expertise transferred into this comfort seatpost? Only available in 31.6mm diameter (to match his bicycles), it's the most expensive on test. It's also a stand-out for coming with a Monolink-compatible head – Selle Italia's proprietary system that uses a single spar in place of traditional rails to support the saddle – though we used the adaptor to run it with a traditional saddle. Like all things Storck, it's feathery light, and any suspicion that the width would result in a less comfortable ride were quickly allayed. The minimalist head design not only looks fantastic but is easy to set up and contributes to the low overall weight. Perfect for fans of lightweight exotica with deep pockets. storck-bicycle.cc

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL

8

10

Canyon VCLS 2.0

£143

Weight: 232g Sizes: 27.2mm only

Made of two separate half-round carbon leaf springs, Canyon's VCLS post allows your saddle to flex backwards as much as 25mm. And unlike some options, it doesn't need lots of length exposed to accomplish this. The flex is visible if you yank the post backwards when off the bike, but while riding, the effect is more subtle, with no irritating superfluous movement, just the feeling that most of the bumps coming up through the frame are magically dissipating before they reach the saddle. Hit a pothole, though, and the flexibility becomes more obvious as the post protects your backside from serious trauma. Although the split design makes set-up more time consuming than a traditional post, it's a one-off job and the minimal weight penalty means there are few situations we can imagine that wouldn't be made comfier by being perched above this post. canyon.com

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL

7

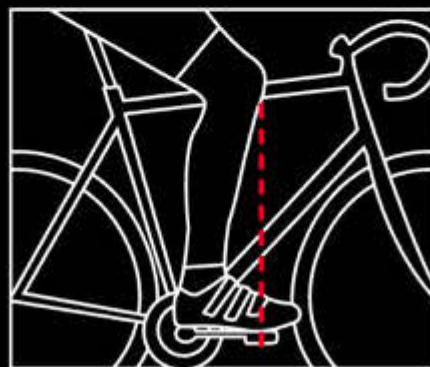
10

POLE POSITION

If you're swapping your seatpost, now is probably as good a time as any to ensure your saddle is in the right position.

The 'knee over pedal spindle' or KOPS method of saddle positioning has long been a bike-fitting staple. Although it's not a hard and fast rule, it's a useful starting point to give you a rough idea of where your saddle should be in order to centre your weight on the bike.

To start, you'll need a plumb line and a way of supporting the bike while you sit on it – a turbo trainer is ideal. A quick spin before making any adjustments will also help you warm up and ensure you're in a natural position. Once you're happy that you've found the sweet spot where you feel most comfortable on the saddle, stop pedalling. Turn your cranks parallel to the ground, with the leading crank in the 3 o'clock position. Hang the plumb line from the bony protrusion just below your kneecap (you may need to ask a friend to help). It should bisect the axle of the pedal (see illustration below). If it's in front or behind, you'll need to shunt the saddle backwards or forwards accordingly. Loosen the bolts on the saddle clamp to do this – but make sure the saddle is kept level. Repeat the procedure until you're happy with the position.



Niner RDO

£179

Weight: 224g Sizes: 27.2, 30.9, 31.6mm

Niner reckons that clever carbon layup doubles the flexibility in this otherwise normal-looking post. They call it 'unstiff carbon'. Niner's mountain bike heritage is evident in the design, which means you'll need to leave a decent amount of post showing (at least 21cm above the seatpost clamp) to get the full effect, making this best for larger riders and compact frames: the more post exposed, the greater the damping. At full extension, the RDO's bump smoothing ability is superb, matching some of the less conventional designs on test but without the kooky looks. However, the more the post disappears in the frame, the stiffer the ride becomes. It's still a comfy choice but its magic properties will be diminished, to the point that if you're a lighter rider on a small frame your experience will be quite different. Still, if it fits your geometry and budget this could be the ideal match. jungleproducts.co.uk

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL
8/10

USE Vybe

£120

Weight: 447g Sizes: 27.2, 30.9, 31.6mm

The Vybe offers 50mm of inline travel – more than any other seatpost on test. It means the rider's weight compresses the post slightly, so the saddle's position is effectively floating rather than fixed. This is noticeable even on smooth roads but while we initially found it disconcerting, we consulted a sports scientist and engineer and neither believed it was likely to rob an average rider of a significant amount of power – this is because as your pedalling power increases, weight supported by the saddle decreases. On bumpy trails, the suspension noticeably reduces fatigue, so we'd be keen to try the Vybe come cyclocross season. Easily tuneable via preload adjustment and interchangeable springs, it's clearly a well-made product and might be the right solution for some riders, but we never really got used to the movement. ultimatesportsengineering.com

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL
6/10

Specialized CG-R

£150

Weight: 275g Sizes: 27.2mm only

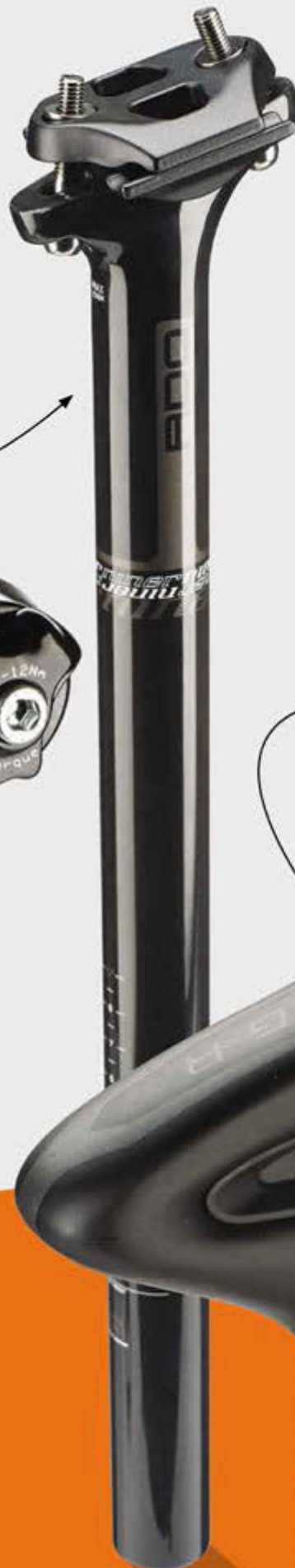


It took a few back-to-back tests with a more rigid post for us to really appreciate the CG-R. It doesn't entirely insulate you from what's going on below the bike so you still get plenty of feedback from the road. It does soften the worst of the road buzz, though, and takes the edge off bigger impacts, leaving you far happier and less fatigued after several hours in the saddle. Visually, the kinked profile took some getting used to but it's worth learning to love, as it's this design feature that gives the saddle its exceptional vertical compliance. While many posts require a lot of length exposed, the CG-R's bump-busting magic happens right at the top of the seatpost, making it an excellent option for people on smaller or non-compact frames. An extremely easy-to-use clamp design is the icing on the cake. specialized.com

Rating

SHOCK ABSORPTION
PEDALLING FEEL
CONSTRUCTION

OVERALL
8/10



ROLL DEEP

There are few ways to purchase a faster ride, but if your pockets are deep enough, a carbon wheelset could be one of them



Deep-section carbon wheels are ubiquitous in the pro peloton these days, and with good reason.

If you're looking to boost your speed, a fast set of wheels is arguably the most effective purchase you can make – on the road, deep-section wheels give a noticeable improvement over standard rims. And with the increasing availability of full carbon clinchers – much more practical for everyday use than tubular tyres – you won't need to reserve your best wheels for race day. They do have their down sides though: braking is typically not as good as an aluminium rim, especially in the wet, and often that aerodynamic advantage comes with a weight penalty. They aren't cheap either – depending on your budget, you might be amazed to find that the six wheelsets we tested represent the cheaper end of the market...

Saturae C50

£800

Weight: 790g/990g

A good offering at a reasonable price. The wide rim profile and DT Swiss spokes are hallmarks of a more expensive wheelset and make for a fast and stiff ride. Tipping the scales at just under 1,800g for the pair, the Saturaes do have a weight penalty compared to the Cero and Pro-Lites at a similar price, and this was noticeable under acceleration. Wheel balance was excellent out of the box and remained so throughout testing. Saturae don't supply own-brand pads but use Shimano carbon pads instead, which were much better than others on test. However, the Pro-Lite rims outperform the Saturae overall under braking. The relatively understated graphics are a refreshing change from many deep-section wheels.

palligap.cc



Rating

SPEED
BRAKING
STIFFNESS

OVERALL
7
10



Scope R5c

£1,198

Weight: 770g/950g

If you're looking for all out speed, the R5c is a super-fast set of wheels that won't disappoint. We matched up the wide profile rim with a 25mm tyre that produced a smooth aerodynamic profile and delivered our tester a new 10-mile time trial PB. The wide rim also made for a really comfortable ride, making the most of the compliance in the tyre. Lighter riders may find them a little harder to handle in strong crosswinds, but we weren't overly put off by the way they coped – about par for a 55mm-deep rim. The supplied Scope own-brand quick-release skewers have a nice internal cam system and feel secure, though Scope's brake pads were a little disappointing and wore out quickly. scopecycling.com

Rating

SPEED
BRAKING
STIFFNESS

OVERALL
8
10



Cero RC45

£800

Weight: 710g/850g

Cero RC45 have a super wide 'toroidal' rim (with an oval-shaped cross section), 28mm at their widest point. This design improves aerodynamic performance in crosswinds, and the RC45 did better in this respect than many of the other wheels tested. We used them with both 25c and 23c tyres but definitely preferred them with a wider tyre, making for better aerodynamics and a more comfortable ride. Internal spoke nipples are a nice touch at this price, as are the high-quality Sapim spokes. Impressively light, with good braking and aerodynamics at just £800, although we found they flexed enough to rub the chainstay under really hard out-of-the-saddle efforts. cycledivision.co.uk

Rating

SPEED
BRAKING
STIFFNESS

OVERALL
7
10





Pro-Lite Bracciano Caliente

£800

Weight: 720g/900g

At 45mm, the Bracciano isn't an especially deep rim, but as an all-round package it really delivers, with lots of attractive features. The rear wheel is noticeably stiffened by the spoke ties on the non-drive side – a simple touch that goes a long way with virtually no weight penalty. Unfortunately, we didn't get a chance to test the 'Ultra High Temperature' brake track to the limit on a long alpine descent, but braking was clearly the best on test. And they come with a great care package, including spare spokes and tensioning tools. The Braccianos are a great set of wheels at a very reasonable price for their performance.

wiggle.com



Rating

SPEED
BRAKING
STIFFNESS

OVERALL

9

10



Vision Trimax 35

£730

Weight: 750g/930g

Vision's Trimax 35 have a hybrid rim featuring an aluminium brake track with structural carbon fairing. At just 35mm, the rims are on the shallow end of the aero spectrum, and at 1,680g for the pair, they're relatively heavy compared to an aluminium wheelset at this price but without a significant aerodynamic benefit to compensate. They're still far from the heaviest wheels on test though, and the hubs are well made with quality bearings, a crisp freehub body and straight-pull spokes. The Trimax 35s certainly aren't a bad set of wheels, but were a bit uninspiring out on the road. At this price, a deeper rim or lighter overall weight would make for a better wheelset.

windwave.co.uk



Rating

SPEED
BRAKING
STIFFNESS

OVERALL

6

10



HOW TEAM SKY CHOOSE THEIR WHEELS

We caught up with Team Sky's Luke Rowe who gave us the lowdown on how the team match their wheel choices to the day's racing...



Team Sky's wheels are supplied by Shimano and come in a range of depths, which we can mix and match, often using a deeper one at the back and a

shallower one up front. Conventionally during Grand Tours, riders might use lighter, shallower rims on big mountain days and the deepest possible on faster, flat days. However, at Team Sky what the riders use is left totally to their personal preference. For instance, Richie Porte will only ever ride shallower wheels, as he just prefers the feel of them. As a smaller rider, if he goes for something deeper he's likely to get blown around a bit. Personally, I always ride a deeper (50mm) rim. Even if it's a super hilly race like the recent Tour of Romandie, I'll use them as I feel I can really throw them down the descents. The whole team tends to ride the Classics season on this wheel, with the only real difference between riders being the tyre pressures.

Token C50

£1,000

Weight: 800g/970g

Token's C50 are a fast set of wheels with some neat design features, such as the spoke pattern on the rear wheel that has double the spokes on the drive-side. Even up the most aggressive gradients in the Chilterns, the C50s dealt with the pressure – feeling stiffer than most of the other wheels on test here. The hubs performed well, never skipping a beat under aggressive riding. However, they're let down by poor braking performance in comparison to the other carbon rims on test, even in perfectly dry conditions – the lack of bite from the rim caught us off guard a couple of times. The Token C50s are a good set of wheels, but were outperformed by some of the cheaper options on test.

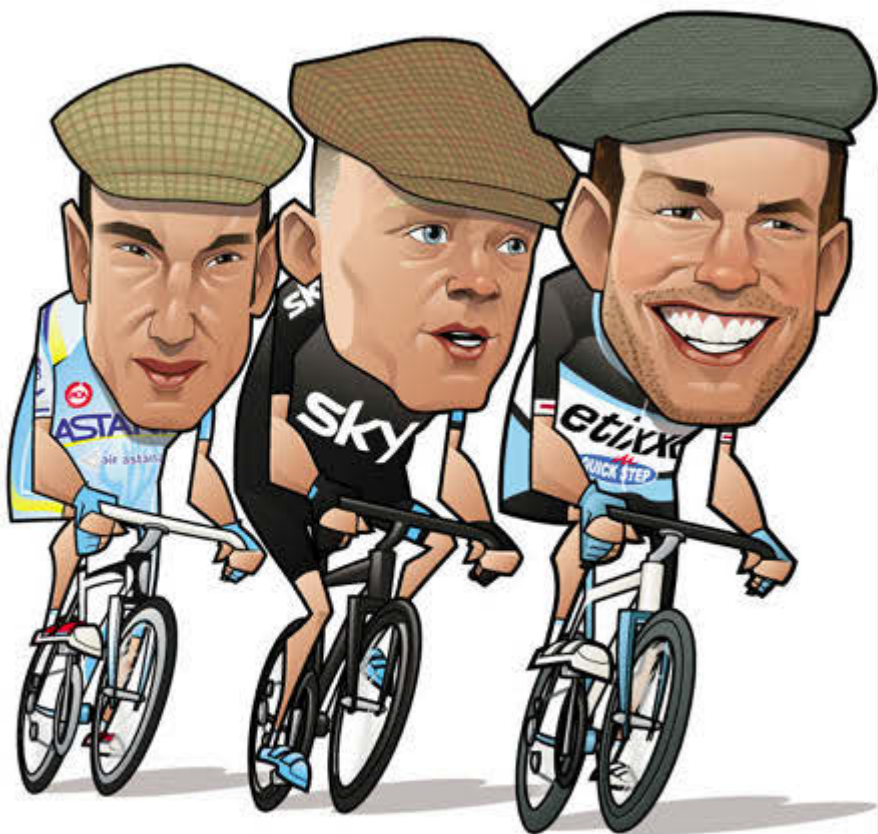
i-ride.co.uk

Rating



OVERALL
6
10





T'Grandest Tour

With the 2015 Tour de France starting on 4 July, Matt Barbet reflects on its flying visit to Yorkshire last year



In between stints presenting the news on Channel 5, Matt Barbet indulges in his passion for cycling by heading up ITV4's *The Cycle Show*

➔ *Emmerdale*. Jarvis Cocker. Geoffrey Boycott. I'm afraid to say that Yorkshire had never looked or sounded so good, nor had it hosted a sporting spectacle quite like it. Not only did the Grand Départ of sport's biggest annual event show off the historic English county's beautiful true colours, it was among the greatest ever settings in more than a hundred editions of the Tour.

Geographically, its highest highs wouldn't even register in the Alps or Pyrenees, but the pure joy of the hoards of fans on the 'Côte de Buttertubs', to use the amusing *Franglais* version, more than compared to – if not topped – anything on *Alpe d'Huez* or the *Tourmalet*. Who'd have guessed?

Of course, the Tour de France is always a carnival, wherever it goes, but before those halcyon days in July last year, nobody could have honestly predicted the scenes over hill and dale. Chief executive of Welcome To Yorkshire Gary Verity's confidence in bringing it to Yorkshire never wavered, but even he, in the wee hours, must have mused on just how successful the whole shebang would really be.

A couple of days before we found out for ourselves that he was absolutely right, there were already stirrings in Harrogate. I was there in an unusual dual role, filming for both *The Cycle Show* and *5 News*, such was the mainstream interest. As we grabbed a few shots of the first stage finish line, a stony-faced Katusha team came swooping through to have a look at the lie of the land. Then FDJ did the same. You and I know the names, but the tourists peering through the windows of the famous Betty's Tea Rooms

wouldn't have had a clue who these teams were.

Then Mark Cavendish appeared like a *matinée* idol on two carbon wheels, surrounded by his formidable lieutenants, and even old ladies out shopping were muttering about the Manx Missile, his mother living nearby, and at exactly what point he would launch his surely victorious sprint – OK, maybe not the last bit, but the buzz among even the blue-rinse brigade was palpable.

I grabbed a quick word, and Cav seemed his usual ebullient and confident self, despite what must have been unprecedented pressure on his already very low shoulders. We all know what happened next.

BACK DOWN TO EARTH

From those dizzy heights, the lowest low. The tarmac at the top of Parliament Street, to be precise. Only 48 hours earlier, I'd been talking to him right there as we rolled along on our bikes next to each other. An unremarkable spot, no offence to the Edinburgh Woollen Mill shop outside which our hero skidded to a halt on his back. It was something nobody would have dared even entertain, but it revealed the huge irony of the greatest three days of bike racing in the UK – British involvement was a disappointment.

Cavendish was gone before it barely got going, and the greatest road cyclist we've ever produced in Sir Bradley Wiggins was prevented from even turning a pedal in anger. David Millar was denied too, as was Luke Rowe, local lad Ben Swift and Alex Dowsett. Even more galling for him was the race practically going past his front door as it eventually wended its way through Essex on to the capital. Then recently crowned British champion Peter Kennaugh took out his own dissatisfaction at missing out on Austria, destroying the field in that country's own minor tour.

Back at the Grandest of Grand Tours, the second and final Yorkshire stage provided some fantastic racing, and was perfectly pitched to get the main Yellow Jersey contenders to compete so early in the three-week race. Froome and Contador pushed the peloton to its limits. The residents of Sheffield's fairly nondescript Jenkin Road must now be used to casual cyclists testing themselves on the same climb the pros duked it out on, before Vincenzo Nibali put down his marker by winning the stage.

'Tourists in Betty's Tea Rooms didn't have a clue who the teams were'

RETIRING CHAMPION

Just three days later, defending champion Chris Froome was gone, as was the sunshine. The wet roads along the border between France and Belgium put paid to his defence, and Team Sky had no real Plan B – that's B for Brad, Brit, and Best-loved. Shame, but perhaps lessons have been learnt.

We've already had a successful Tour de Yorkshire. Tour organisers ASO know a market when they see one. (Good to see Dame Sarah Storey leading the names in the women's version too.)

They've also tweaked the rules for the Tour de France again, with the return of the opening stage time trial in Utrecht in the Netherlands, and more points for winners of sprint stages. Wiggo's mind may be on different prizes these days, but these tweaks could once again mean Cav and Froome are back in the reckoning for jerseys as a result.

No, it's not back this side of the Channel. But, we'll always have Yorkshire, and I'm glad the Brits will be competing at cycling's biggest event once more. 🚴

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RIDER'S GUIDE TO THE TOUR DE FRANCE

2015

RIDE LIKE THE PROS

Stage-by-stage analysis and expert training advice on how to be a Tour contender

LEARN HOW TO

- Shed weight
- Fuel your ride
- Toughen up

IMPROVE YOUR

- Endurance
- Power
- Speed

PLUS

- LE TOUR IN NUMBERS
- DETAILS OF EVERY STAGE
- FORM GUIDE TO THE TOP TEAMS AND RIDERS



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*Conditions apply.



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• THE ROUTE

IT'S NOT JUST FOR THE PROS

The 2015 Tour de France promises to be an epic battle between the world's best cyclists. Having been denied a real showdown by injuries to former winners Chris Froome and Alberto Contador last year, a global audience of millions will be hoping the top pros stay fit, all the way to Paris on 26 July.

The Tour inspires all of us to get on our bikes. We want to ride faster, for longer. It brings out a competitive streak that makes us want our own taste of glory. And whether you're entering a race, training for a sportive or simply hoping to enjoy long days in the saddle or the commute to work without your legs falling off, we can help.

Our stage-by-stage guide to the Tour brings you the best training, nourishment and recovery advice from top coaches, nutritionists and sports scientists to help you get more out of your time in the saddle. Whether you're training for a time trial, sprint or a long day race, we've got it covered. We've got tips on climbing, descending and cornering – the key techniques you'll need to master to make your best even better, plus advice on how to maintain and upgrade your bike, how to get comfortable in the saddle, and key aspects of performance such as fuelling your ride, losing weight and recovering from hard efforts.

Whether you're Chris Froome or, well, just you, we all want to be better cyclists. Whatever your goal, we can get you there. *Enjoy the ride.

MICHAEL DONLEVY
TOUR DE FRANCE GUIDE EDITOR

*This does not include unrealistic ambitions such as actually winning the Tour de France, for example. Just to be clear.



RUNNERS AND RIDERS

THE FAVOURITES



ALBERTO CONTADOR (ESP) TINKOFF-SAXO

A two-time winner (in 2007 and 2009), he also topped the General Classification in 2010 before being stripped of the title for a failed drugs test, and suspended until 2012. The 32-year-old's 2014 Tour ended with a crash on stage 10.



CHRIS FROOME (GB) TEAM SKY

The 2013 winner began 2014 well but withdrew during stage five, due to injuries caused by crashing three times in two days. Froome beat Contador in this year's Ruta del Sol but a chest infection has hurt the 30-year-old Brit's tour prep.



VINCENZO NIBALI (IT) ASTANA

The Shark of Messina joined Contador as one of only six men to have won all three Grand Tours when he triumphed in last year's Tour. The 30-year-old Italian won by 7mins 52secs, the largest margin in 17 years, with four stage wins.



NAIRO QUINTANA (COL) MOVISTAR

The 25-year-old took his first Grand Tour win at last year's Giro. Despite suffering injuries in a crash at the Colombian national championships in February, he won Tirreno-Adriatico, winning one mountain stage in a blizzard.

253km

Longest solo breakaway stage win – Albert Bourlon in 1947

MOST DAYS SPENT IN
YELLOW JERSEY ON
ONE TOUR – **ROMAIN
MAES** IN 1935 (LED
FROM STAGE ONE
TO THE FINISH)

21

1/2

Fewest days spent in
yellow jersey on one Tour
– **Jan Janssen** in 1968
(after taking the lead
in a split stage on the
morning of the last day)



TEAMS Who to look out for in the Tour's biggest teams



TEAM SKY

Froome will be hoping to put Sky's woeful 2014 right, with back-up from Richie Porte, Nicolas Roche and Geraint Thomas.



TINKOFF-SAXO

Contador will be ably supported by Peter Sagan, two-time Giro winner Ivan Basso (37) and super Aussie Michael Rogers (35).



ASTANA

Nibali will be rallying the troops – Dutchman Lars Boom won a stage in 2014, while Spaniard Luis-León Sánchez has won four.



MOVISTAR

As well as Quintana, look for triple Tour stagewinner Alejandro Valverde, and British time trial specialist Alex Dowsett.



BMC

Tejay van Garderen is a strong leader, backed by 2015 Tour Down Under winner Rohan Dennis and 2012 World Road Race champion Philippe Gilbert.



ORICA- GREENEDGE

Keep an eye on Tour stage winners Simon Gerrans and Michael Matthews, as well as rising Brit twins Adam and Simon Yates.



ETIXX- QUICKSTEP

Cav's team-mates include 2014 World Road Race Champion Michał Kwiatkowski and Classics/cobbles ace Niki Terpstra.



CANNONDALE- GARMIN

Features Irishman Dan Martin, Canadian 2012 Giro winner Ryder Hesjedal and up-and-coming Italian Moreno Moser.



22

MINS 50SECS

**BIGGEST WINNING MARGIN
ON A STAGE (SINCE WWII)
JOSE VIEJO, STAGE 11, 1976**

96

**MOST DAYS SPENT
WEARING THE
YELLOW JERSEY
EDDY MERCKX
(IN SEVEN TOURS)**



COFIDIS

Watch Nacer Bouhanni, Christophe Laporte, Loïc Chetout and Nicolas Edet, who won the Vuelta mountains classification in 2013.



TREK

Despite a serious back injury in March, Fabian Cancellara is a good bet for the stage one time trial and the cobbles of stage four.



FDJ

Talented youngsters include Thibaut Pinot who finished third overall in last year's Tour – winning the Best Young Rider prize – and Arnaud Démare.



TEAM GIANT-ALPECIN

The big name is Marcel Kittel, who stole Cav's crown as King of the Champs-Élysées by winning the final stage for the last two years.

THEN & NOW

DATE



WINNER'S PRIZE

1903

6,075 francs
(about €30,000 today)

2015

€450,000

STAGES



DISTANCE



LONGEST STAGE



HEAD PROTECTION

WOOL CAP & GOGGLES • HELMET & SUNGLASSES

CLOTHING

WOOL/COTTON & LOOSE • LYCRA/POLYESTER & TIGHT

BIKES

STEEL/WOOD • CARBON/ALLOYS

BIKE WEIGHT

18kg

7kg





STAGE

01

SATURDAY 04 JULY

UTRECHT



CITY OF CYCLING

UTRECHT STATION HAS PARKING FOR 12,500 BIKES



13.8
KILOMETRES

TIME TRIAL



HOW TO... TIME TRIAL LIKE A PRO

Although it's only 13.8km, the opening stage of this year's Tour will be a stern test. It doesn't matter how strong a rider you are, doing well in a time trial requires training. You can't just turn up and expect to keep pace.

The theory is simple. 'To ride a time trial you need to maintain a long, steady effort at the same pace,' says coach Will Newton. 'The ability to do that – and improve your time – only comes from training.'

'If you want to ride for one hour at 25mph then you've got to start by riding at 25mph,' says coach Paul Butler (pbcyclecoaching.co.uk). 'Once you've decided on your target speed, you need to practise riding at that pace in your TT position. Where possible, always train on the road, not the turbo. Find a flat road and ride at your target speed until you can't sustain it any longer. Now ride that road in the other direction to check that your effort wasn't gradient or wind assisted. Do this session twice a week and

you will increase the duration that you can sustain that speed.'

Adding threshold tolerance intervals to your usual long ride will help. Your lactate threshold is the level of effort at which your body produces lactic acid, which is what causes your muscles to burn. Training just below this level will improve fitness and increase your lactate tolerance, allowing you to race faster, for longer. Try four or five intervals of five minutes at race pace, with five minutes' rest between each one.

'Threshold tolerance intervals aim to increase maximal aerobic power, VO2 max and your threshold, and are very beneficial,' says coach Ric Stern (rstsport.com). 'Maintain a cadence of 85-95rpm with gearing fairly high. Increase your cadence to the upper limit when going uphill.'

You should see your TT times improve within weeks. As Butler says, 'As long as you have a strong aerobic base, training harder makes you go faster.'

AERO ITALIAN

Vincenzo Nibali, resplendent in yellow skinsuit, tackles the stage 20 time trial in the 2014 Tour





STAGE

02

SUNDAY 05 JULY

UTRECHT
TO
ZEELANDLOW COUNTRY
MUCH OF ZEELAND IS BELOW SEA LEVEL166
KILOMETRES

SPRINT



HOW TO... SPRINT FASTER

Last year, Vincenzo Nibali laid down an early marker with a late solo attack to take victory on stage two to Sheffield. But these early flat stages are more likely to end in a showdown between the sprinters – always among the most dramatic moments of the Tour.

While you might never rub shoulders with Cavendish, Kittel and the rest, you can improve your own sprinting ability by adding the right sessions to your training plan.

Like threshold tolerance intervals (see page 7), flat sprints can be added to your regular long rides. 'The aim of flat sprints is quite simply to increase peak power,' says coach Ric Stern. 'On flat roads, accelerate rapidly from your regular riding speed to maximum sprint effort and hold this for 10-15 seconds. As you start the sprint, get out of your saddle and remain standing for the first five seconds, then return to your saddle for the remainder of the sprint. Use a moderately high gear, such as 52x17 or 50x16, and aim to reach maximum cadence as quickly and smoothly as possible. Repeat this sequence four to five times, then

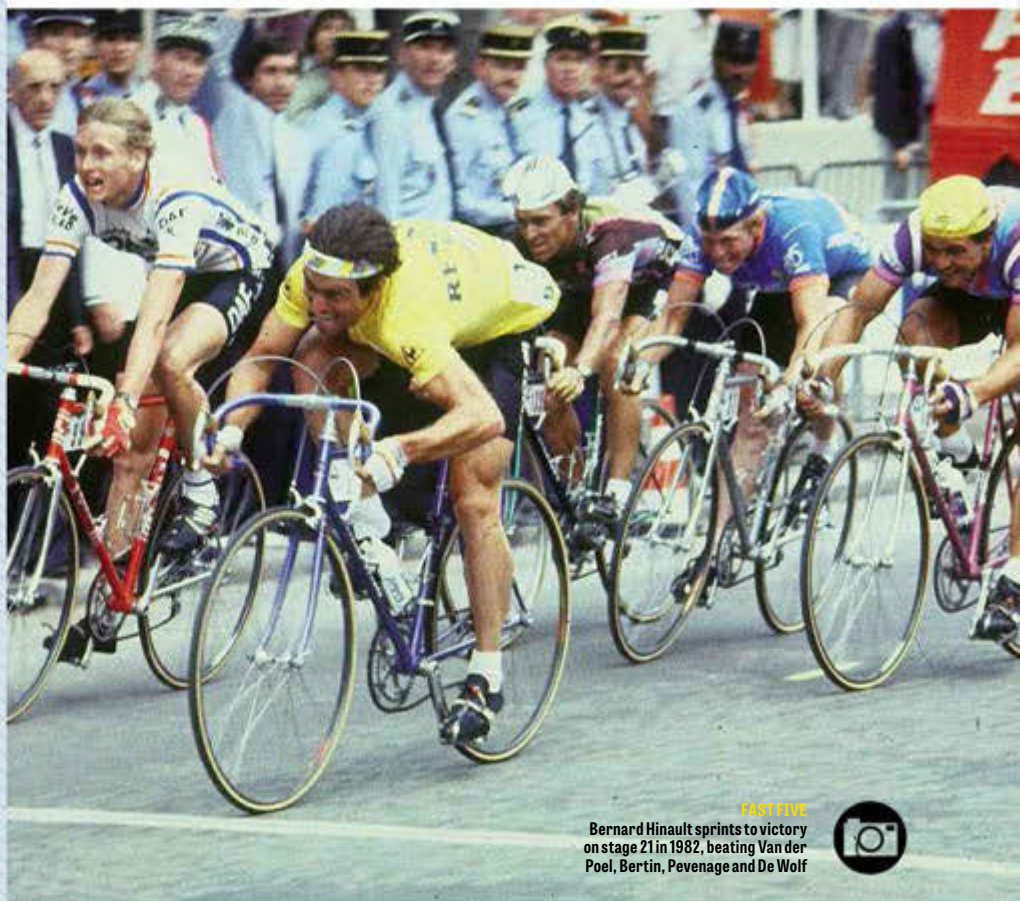
recover for eight minutes at the easiest possible pace before going again.'

'Focus on cadence and holding the bars securely,' says coach Tom Newman. 'Then, as you get faster, you can decrease the recovery and increase the frequency. Have a three-minute recovery and sprint again. Doing 10 of these per session is enough.

'Another technique is to sprint from a fast rolling start, say 20mph, and hit your top speed, changing down through the gears for a 200m sprint,' he says. 'Hit this as hard as you can. Recover for three to five minutes and repeat four more times. Ensure you're holding the bars securely and your body isn't rocking all over the place.'

Technique is vital. 'Pull on the bars as you push on the pedals,' advises coach Paul Butler. 'In training, try to lift the front wheel off the road as you push down on the pedals.

'Finally, pick a bigger gear than you think you'll need for the race as most people end up seated before the finish line as they "spin out",' he adds. 'It's surprising how hard you can go at the end of the race when you know it's all going to be over in a few seconds.'



FAST FIVE
Bernard Hinault sprints to victory on stage 21 in 1982, beating Van der Poel, Bertin, Pevenage and De Wolf





STAGE

03

MONDAY 06 JULY

ANVERS
TO
HUYGIANT SLAYER
LOCAL HERO BRABO WHO KILLED A GIANT159.5
KILOMETRES

HILLY

LE PAC A MAC
Freebies from the Tour caravan
help spectators enjoy the racing
whatever the weather

HOW TO... HANDLE THE WEATHER

As if the stage three finish on the brutal Mur de Huy climb wasn't bad enough, there's always a strong chance of rain in Belgium, which has a similarly changeable climate to the UK. Fortunately, wearing the right kit can go a long way to improving performance in inclement conditions.

'If you're riding a sportive in the UK, always pack arm warmers, knee or leg warmers and a rain jacket or gilet,' explains coach Ric Stern. Obviously, if the weather's been perfect for weeks and the forecast is good, you may not want to carry these on the ride, but at least take them with you in your kit bag just in case.

'I'd bring waterproof gloves, overshoes and a rain jacket,' says coach Tom Newman (capitalcyclecoaching.co.uk). 'Keep warm at all costs, as you'll feel very cold if you get soaked. It's one thing getting wet, it's another thing altogether getting cold.'

But it's not just your clothing you need to

think of. 'In terms of your bike, mudguards are a necessity as you don't want water flicking up all over your back. Puncture-proof tyres – or as close as you can get – are also a good idea when the weather's bad.'

Don't let rain put you off training either. 'You'll get wet, so you have to man up, but think of the warm glow upon returning home,' says Newman. 'And have a riding plan. Say, for example, "I'll do two hours – instead of three or four – with two blocks of 15 minutes in the sweet spot [about 90% of threshold power] with 10mins recovery." Throw in a couple of sets of two 10-second sprints with 5mins recovery between each to take your mind off the weather.'

Coach Ian Goodhew agrees. 'So much of cycling – whether you're racing or entering a sportive – is about practice. If you've spent three months training in sunny weather and on the day of an event it pours, what are you going to do? You need to have the mental strength to train on days when it's wet.'

**'KEEP WARM
AT ALL COSTS.
GETTING WET
IS ONE THING,
GETTING COLD
IS ANOTHER'**



STAGE

04

TUESDAY 07 JULY

SERAING
TO
CAMBRAI



TWIN TOWERS
THE 14TH-CENTURY PARIS GATE IN CAMBRAI



223.5
KILOMETRES

COBBLES



HOW TO... RIDE COBBLES

In a nod to one of cycling's Classics, stage four features seven cobbled sectors totalling 13km, six of which come within a 30km section taken from the Paris-Roubaix route. While riding the slippery, unpredictable *pavé* is something of a specialist skill, it's worth learning how to deal with cobbles in case you ever happen across them – or even deliberately seek them out on a sportive (the Tour of Flanders Cyclo or Paris-Roubaix Challenge, for example).

First, let's take a look at you. Your nether regions are going to take a battering, so be prepared. 'I'd suggest cream for any long ride, especially on the cobbles – even more so if it's wet,' says coach Will Newton. 'You can use chamois cream, but I use nappy cream to save me a trip to the bike shop.'

Next up, your bike. 'Use two layers of bar tape to absorb the shock in your hands,' says coach Paul Butler. 'Use old wheels if you value your fancy deep sections, ideally alloy rims with more spokes than usual – between 32 and 36. And use 25mm or 28mm tyres pumped up to about 90psi –

even less, if you're light. Ensure you have clearance for your brakes though – ask your local bike shop if you need help.'

Bike sorted, it's your technique that will hopefully keep you on it. 'Sit back on your saddle, hold your bars lightly and on top and let the front glide over the top of the cobbles,' says Butler.

'Enter the first section steadily, push hard on the pedals with a lower cadence than normal, relax and increase your speed as you become more confident,' he adds. 'If it's wet, corner much slower than usual and don't lean your bike.'

Gearing is also important, says Newton. 'From my experience, when it's rough it's more comfortable to ride in a higher gear – that allows you to ride at a lower cadence.'

'Lastly, don't ride them,' says Butler. This is not as defeatist as it sounds. 'I don't mean stay at home, but try to ride the smoother dirt or grass along the edge of the road. Even better, do a recce before the ride so you can find these smoother spots. If you come off, don't say you weren't warned.'



BUMP 'N' GRIND
Vincenzo Nibali in action on the pavé during the 155km stage five of the 2014 Tour





STAGE

05

WEDNESDAY 08 JULY

ARRAS
TO
AMIENSBACK FOR MORE
THE TOUR HAS VISITED ARRAS THREE TIMES189.5
KILOMETRES

SPRINT



HAMMER AND TONGS
Unlike early Tour riders, you won't need blacksmith skills to carry out roadside repairs



HOW TO... PREPARE YOUR BIKE

A stage that takes in some of the battlefields of the First World War will no doubt draw comparison from commentators with the attrition of the Tour. The reality of cycling is never quite that bad, of course, but long, hard rides can take their toll on your bike, so it's essential to make sure your equipment is in top condition before setting off.

'Always clean and check your bike,' says coach Ian Goodhew. 'It's no good spending money on equipment if you don't look after it. Look at it as an investment that will serve you well for years – if you maintain it properly.'

'Make sure your tyres are fitted correctly,' says coach Ric Stern. 'If tyres are incorrectly fitted – the bead is on the inner tube – you'll flat straight away. The tyres should also not be worn out. A frayed carcass or sidewall is unsafe, as is having holes over the tread area. They should be inflated correctly, to the manufacturer's instructions, and in wet conditions should be at the lower end of this

range to help with grip. On drier days, the tyres can be closer to the top of the range.'

'Make sure your headset is correctly adjusted so it doesn't judder when braking,' Stern adds. 'Check your brakes stop you and that the cables are in good condition and not rusty or sticking when you pull on the

brakes. And ensure your gears work smoothly, and you can engage the lowest gear – useful uphill – as well as the highest.'

'If in any doubt, take your bike to a qualified mechanic for an MOT,' says Stern. 'Build a relationship with your bike shop,' adds Newton. 'They can check things like your gears in 30 seconds, and help you with

your bike fit. You want to be comfortable, but you don't want to sit up in a begging position and corner like a postman.'

Finally, if you're going riding for a week abroad, remember to take spares: inner tubes, tyres, chain links and brake cables, for example. 'These things aren't very sexy but they're important,' says Goodhew.

**'YOUR BIKE
WILL SERVE
YOU WELL FOR
YEARS – IF YOU
MAINTAIN IT
PROPERLY'**



STAGE

06

THURSDAY 09 JULY

ABBEVILLE
TO
LE HAVRE



CATHEDRAL CITY
THE TOUR LAST VISITED ABBEVILLE IN 2012



191.5
KILOMETRES

FLAT



PERFECT PERCH
A Vacansoleil rider checks his bike is set-up correctly ahead of a team time trial in 2013's Tour



HOW TO... GET COMFORTABLE ON THE BIKE

With a whopping 120km of coastal road that will make for blustery conditions, stage six highlights how important it is to be as comfortable as possible during long, difficult days in the saddle. It all starts with bike fit.

'Remember, there are only three points of contact between rider and bike: saddle, pedals and handlebars,' says coach Ian Goodhew. 'Focus on getting these right.'

To find the correct saddle height for you, coach Ric Stern suggests, 'A good starting point is to set the cranks in line with the seatpost then set the distance from the top of your saddle to the top of the lower pedal as 96-100% of your greater trochanteric height' (ie from the bottom of your feet to the greater trochanter – the bony bit at the top of your hip). With your leg straight, you should find this comfortable, with minor adjustments.

To get those minor adjustments right, go to an experienced bike fitter. 'A good bike fit is about finding the ideal blend of comfort,

aerodynamics and power production,' says coach Paul Butler. 'The problems are the opposite: possible risk of injury, being uncomfortable, aching joints, too much drag and loss of power.'

'There are two key requirements I look for in a bike fit,' Butler adds. 'First, does the fitter understand my needs and the type of riding I do? Secondly, I like to walk away with my own bike in the new position. Some fitters measure you on their in-house rig and give you the measurements to take home. Don't do this.'

'Of course, in cycling, legs are the engine, but a lot of cyclists have more problems with their neck and back than they do with their legs,' says sports therapist Ian Holmes (prosportsmassages.com). 'Many people spend most of their time sat at a desk. For them, posture and flexibility are bigger issues than exercise.' With that in mind, you should review your bike fit annually to allow for changes in weight and flexibility.

HOW TO... INCREASE YOUR CADENCE

As the Tour moves from Brittany to Normandy, stage seven should favour the sprinters, but they'll need to close down any breakaways. One of their weapons will be a high cadence – that is, the number of revolutions per minute they can turn their pedals.

'Having a wide "cadence envelope"

is a powerful tool in the cyclist's armoury,' says coach Tom Newman. 'Being able to pedal quickly and efficiently is a core skill – think of team pursuers and how they use a high cadence to maintain speed.

'Your racing cadence will normally fall between 90 and 100rpm,' Newman adds.

'Include a cadence session in your training rides by focusing on 30 seconds at 130rpm, then 30 seconds at 90rpm and go again. Ride four to six of these in one block, then have 10 minutes of easy spinning and go again.'

In training, it can be worth aiming even higher than that. 'If you can get used to

riding at 100-120rpm you'll soon see the benefits,' says coach Ian Goodhew.

That said, don't work on cadence to the detriment of other aspects. 'Simply thumping a big gear is not a good idea,' Goodhew adds. 'If you hit a headwind or a false flat, you'll run out of steam. You also need to focus on pedalling technique.

You're looking for efficiency, and higher cadence does increase mobility. But you need to understand how your natural cadence, seated and out of the saddle, works. Chris Froome and Alberto Contador are completely different – Froome uses incredibly high cadence, while Contador is more measured – but both are

fantastic. No two riders are the same.'

A higher cadence can also help on hills. 'Don't change gear early,' says Goodhew. 'A lot of people stick it in the little ring way too early and lose momentum – you can scrub 5kmh off your speed before you've even started going uphill.'

'FROOME USES INCREDIBLY HIGH CADENCE, BUT CONTADOR IS MORE MEASURED'



PEDAL POWER

Riders need to keep up their cadence to stay in touch with the peloton as it spreads out



STAGE

07

FRIDAY 10 JULY

LIVAROT
TO
FOUGÈRES



BIG STINK

LIVAROT IS FAMOUS FOR ITS SMELLY CHEESE



190.5
KILOMETRES

SPRINT





STAGE

08

SATURDAY 11 JULY

RENNES
TO
MÛR-DE-BRETAGNE



HOME OF LEGENDS
TOUR GREAT LOUISON BOBET CAME FROM RENNES



181.5
KILOMETRES

HILLY



ROUND THE BEND
Note the way pro riders keep
their outside foot low and eyes
ahead as they take a corner



HOW TO... CORNER AT SPEED

Although stage eight is designated a flat stage, the route from Rennes to Mûr-de-Bretagne will be where the sprinters sit back (or drop out) as the main contenders for overall victory come to the fore on the viciously steep final climb. At a time when every second counts, we're going to look at how to save some, by learning to take corners like a pro.

'Keep your hands on the drops – always,' says coach Will Newton. 'Bradley Wiggins doesn't do it so no one else does, but he's wrong. Keeping your hands low and wide gives you balance as you lean in to a corner.'

'Look where you want to go, not down at the road in front of you,' he adds. 'This is even more important when you're going too fast and you're not going to make it. Then you need to look even further ahead to see where you're going to end up. Point your belly button where you want to go and the bike will almost always follow.'

'Keep your weight on the outside leg and the inside hand,' says coach Ian Goodhew. 'You need to practise this on small local descents, rather than the Alps, because it

can feel weird, but it will keep your centre of gravity low. You're basically trying to keep your weight on the outside, but point at the apex with your inside hand.'

'If you need to brake, stand the bike up before you do,' Newton says. 'If you grab a handful of rear brake when you're leaning you will end up on the tarmac, because there's not much load on the rear and the bike will spit you off.'

'Use both brakes all the time,' Goodhew adds. 'You can feather one or the other but if you don't get used to using both, at some point you'll hit trouble. And make sure your brakes and brake blocks work, and that your tyres are in good condition.'

'When climbing, take the widest possible line, especially on hairpins,' Newton adds. 'You'll find the road is less steep towards the outside.' So for a right-hand bend, this will be towards the left of the road, while for a left-hand bend, keep as far right as possible.

'Do some mountain biking,' Newton says. 'It helps you get used to fact that the wheels move around beneath you – and that the bike will go where you want it to.'

HOW TO... RIDE IN A GROUP

The team time trial is all about working together in a group – something you'll need to master to if you plan to ride with your club, enter a sportive or race this season.

'Don't ride in a bunch at speed, especially downhill, if you've never done it before,' says coach Ric Stern. 'Hitting the deck and getting road rash – or worse, broken bones – is a surefire way of ruining your day out, smashing your bike and upsetting anyone else you bring off. Practise group riding at gentle speeds in a safe, controlled environment. Lots of coaches offer instruction on group rides, and some clubs have sessions organised.'

'If you are well practised and you're riding in a bunch, take your turn on the front,' says coach Will Newton. 'But don't surge ahead and try to smash everyone – the aim is to maintain the pace of the bunch.'

'If the bunch is erratic, try to spot who the better riders are and have a quiet word

with them about getting away,' he says. 'Or drop back and go at your own pace. Either way, an erratic bunch is an accident waiting to happen.'

'When you're riding on a wheel, look at the rider and not the wheel,' says Newton. 'Wheels don't give off body language, so you can't tell from looking at them whether

the rider is going to slow or change direction.'

'You've got a mouth – use it,' adds coach Ian Goodhew. 'Hand signals are great but someone at the back might not see you point at a hole. So shout, "Hole!" as well. Next time it could be you who benefits.'

'Other riders can help when you're flagging – sometimes

a friendly word can help provide motivation and inspiration to finish or reach the summit,' says Stern. 'Under difficult conditions, such as bad weather, it can be useful to remember that everyone else is suffering in the cold and wet too. Riding with others can help distract you.'

**'LOOK AT THE
RIDER, NOT
THEIR WHEEL –
WHEELS DON'T
GIVE OFF BODY
LANGUAGE'**



TEAM PLAYERS
Alberto Contador's Saxo-Tinkoff set off on the team time trial in the 2013 Tour



STAGE

09

SUNDAY 12 JULY

VANNES
TO
PLUMELEC



VANNES-TASTIC

THE TOUR FIRST VISITED THIS PORT TOWN IN 1925

Vannes



Plumelec

28
KILOMETRES

TEAM TIME TRIAL





STAGE

10

TUESDAY 14 JULY

TARBES TO
LA PIERRE-
SAINT-MARTIN



MOUNTAINS AHOY
TARBES SITS AT THE FOOT OF THE PYRÉNÉES



167

KILOMETRES

MOUNTAIN



HOW TO... CLIMB LIKE QUINTANA

After a rest day, the Tour hits the mountains for the first of three stages in the Pyrénées, taking in the Col de Soudet just before the finish at La Pierre-Saint-Martin. With that in mind, it's time to work on your climbing.

'It's always better to ride with a higher cadence,' says coach Will Newton. 'Riding up a hill at 40rpm doesn't get you any stronger, and to get stronger at 100rpm you actually have to ride at 100rpm, or your nervous system doesn't adapt.'

'In training, practise climbing both

seated and standing,' Newton adds. 'Some people get used to remaining seated and then can't go more than 10 pedal strokes when they do stand up. If you get used to it, you'll realise this climbing thing is OK.'

'Set yourself little goals to help finish,' says coach Ric Stern. 'So, on a long climb, you may need to set a goal of riding to each corner and then a new goal when you arrive at that corner, rather than thinking of the finish. You can then split the remaining ride into small chunks—such as complete the next 5km, and then take a short break.'

'Visualise the bits that scare you,' says Newton. 'See yourself achieving that one-in-four climb. Not storming up it, because that's probably unrealistic, but at a steady pace with controlled breathing.'

'To improve, you have to get into a racer's mindset,' Newton adds. 'A sportive rider will pick a comfortable gear and say, "See you at the top," and that's fine. But a racer will chew the handlebars off before the top. If you can do that, when it comes to racing you'll be better able to launch an attack, or close down someone who's broken away.'

MAN VS MOUNTAIN

The infamous Alpe d'Huez (stage 20), is one of five mountaintop finishes on this year's Tour





STAGE 11

WEDNESDAY 15 JULY

PAU
TO
CAUTERETS



PAU RELATIONS
AFTER PAU, RIDERS HEAD TO THE TOURMALET



188
KILOMETRES

MOUNTAIN



HOW TO... FUEL LONG RIDES

As the Tour enters the heart of the Pyrénées, the riders face climbs up the Col d'Aspin and the mighty Tourmalet. With the mountains coming thick and fast, riders will be paying particular attention to fuel – and that's something you should also be doing when you prepare for a long, hilly sportive or race.

'In the days before the event, increase your carb intake to store more usable energy and provide a quality energy source for difficult sections where your intensity has to increase,' says coach Ric Stern.

Will Newton has another take: 'I'd eat the same but reduce training in the run-up to the event. You won't feel bloated, won't put on weight and are less likely to need those nasty Portaloos by the side of the course.

'Don't overdo the carbs,' advises Newton. 'Your body can only process around 250 calories per hour on the bike, unless it's really cold, and if you have too much carbohydrate you can feel sick. What you're really doing by eating on the bike is reminding your body that it's got fuel.'

Take on caffeine. 'Caffeine helps mobilise

fatty acids, which give you fuel at high intensity and spare the muscle glycogen that would otherwise be used for energy,' says Nigel Mitchell, head of nutrition at Team Sky. 'It also has a direct effect on the central nervous system, boosting concentration and reducing the perception of effort.'

'Electrolytes are important,' Newton adds. 'Often when you're tired on the bike what you actually need is sodium, so take salt tablets or something like a High5 drink (high5.co.uk).'

'Don't wait for a feed stop,' says Goodhew. 'Eat little and often along the way. Plus if you eat something at the feed station you're not used to, it may adversely affect you.'

'Drink to keep up with your thirst, not get ahead of it,' says Newton. 'Some people say that if you're thirsty it's too late, but you don't want too much liquid sloshing around inside you. Drink when you're thirsty, but before you're really thirsty.'

'Don't take energy gels before the last hour,' says Goodhew. 'They only last 20 minutes and if you take them early you have to keep taking them or you'll fall off the cliff.'



LUNCH TO GO
Domenico Pozzovivo picks up a muset (feed bag) on a stage of the 2013 Tour



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WORTH
£1,000



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Front & Rear Mech: Campagnolo Veloce
Chainset: Miche
Brakes: Miche
Bars: RHM01
Stem: Zero1
Seatpost: RSx01
Rims: Miche Reflex
Tyres: Vittoria Rubino

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GET STRONGER GET FASTER

After a strong start to 2015 the Manx Missile Mark Cavendish tells Men's Fitness how changing up his training has primed him for the toughest Tour ever. Plus hour record holder Alex Dowsett on mental focus, how to turn your commute into a high-intensity training session and exercise hacks for making you faster than ever before. Get ready for a summer of speed.

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L'AMERICAIN VS LE PROFESSEUR
World Champion Greg LeMond
chases yellow jersey wearer
Laurent Fignon on the 1989 Tour



STAGE

12

THURSDAY 16 JULY

LANNEMEZAN
TO PLATEAU
DE BEILLE



GOING DOWN
EN ROUTE TO PLATEAU DE BEILLE IN 2002



195
KILOMETRES

MOUNTAIN



HOW TO... BUILD ENDURANCE

Stage 12 finishes with a gruelling climb to the Plateau de Beille. And as two-time Tour winner Laurent Fignon used to say, if you hadn't got your preparation absolutely spot-on, the third day in the mountains was the toughest of all. This is where endurance training comes in.

'If you're entering a five-hour sportive, you need to ride for more than two hours in training to get used to the fuel change from using sugars from carbohydrate to using your muscle glycogen,' says coach Ian Goodhew. 'If you're not used to it, you will really struggle.'

Adding turbo sessions can help build endurance, says coach Will Newton. 'Do one hour per week, with a 20-minute warm-up, and three seven-minute intervals at race pace with five minutes recovery in between. This session addresses sustained race riding and will target energy systems for both flat and climbing, although the position and cadence adopted should favour sustained

output on flatter terrain. This should be done as well as a weekly ride of at least two hours – if only for the time in the saddle and a chance to enjoy being fit. Do these at a steady pace – at the top end of where you could hold a conversation – on rolling terrain with some seated hills thrown in.'

'Long sessions are an opportunity to focus on technique,' says coach Ric Stern. 'Focus on pedalling smoothly and maintaining a cadence of 90rpm on the flat. These sessions are also an excellent way of learning to eat while training.'

'Tough days are about mental strength,' Goodhew says. 'The top pros suffer as much as anyone else but they know how to handle it. You can train your body for the distance you want to ride, but your head has to be able to handle it as well. You might look for excuses. And it might be cold or wet, but modern clothing lets you do it, so the barrier to riding becomes mental rather than physical. Just get on your bike and do it.'

**'PROS SUFFER
AS MUCH AS
ANYONE ELSE
BUT KNOW
HOW TO
HANDLE IT'**



STAGE

13

FRIDAY 17 JULY

MURET
TO
RODEZ



END OF THE RODEZ
RIDERS MAY BE PRAYING FOR NEW LEGS



198.5
KILOMETRES

SPRINT



HOW TO... SHED WEIGHT

The more experienced members of the peloton will have ridden parts of this stage on the Albi time trial in 2007, but this time the route dives into the Tarn valley, and the hillier parts of the Aveyron area will catch some off their guard. The final showdown will be between the sprinters who are able to survive the steep hills, which brings us onto the question of getting yourself in shape for the sort of challenge where a flat course suddenly spikes uphill without warning.

'The speed at which you can travel on a bike is dependent on how much force can be generated to overcome various resistive factors,' says John Kelly, senior lecturer in exercise physiology at the University of Chichester. 'These can be grouped as the rider, the bike, the components and the environment.'

We'll look at the bike and components on p31, but for now we're going to consider the rider and the environment.

'The rider includes their skill, their fitness – both cardiovascular and muscular – and their weight,' Kelly adds, and it's the last of these that we're most interested in when the road starts going upwards.

'A good rule of thumb is to make everything as light as possible,' Kelly says. 'You can get away with carrying a little more weight if you're time trialling on a flat course. But as soon as you go uphill, you're battling against gravity, so the lighter the bike/rider complex, the faster you go for a given effort.'

The key here isn't just weight but body fat, which is separate from the weight you carry around in the form of muscle tissue and body fluid.

'Body fat can be manipulated in one of three ways: diet, exercise or, in most cases, a combination of the two,' says Kelly. 'Losing weight can be accomplished by a small decrease in energy intake, provided energy expenditure stays the same. My advice would be to do it slowly, perhaps only 300-500g per week, approximately 1.5-2kg per month. This is the equivalent of losing about 3,500 calories from your diet per week, or 500 per day.'

'The body, being the body, will detect a shift in calorie intake, and will take measures to stop the weight loss. It will





'AS SOON AS YOU GO UPHILL, YOU'RE BATTLING AGAINST GRAVITY'



THE REAL SKINNY

Belgium's Kevin de Weert weighs under 11 stone despite being 6ft tall

become increasingly difficult to lose weight, so I suggest "cycling" over the course of the week and month.'

This is not the sort of cycling you do on your bike. 'By cycling you have, for example, one day a week where you don't restrict calories, and one week a month where you aim to be calorie neutral, rather than in calorie deficit.' This stops your body from entering starvation mode, and will ensure you still continue to lose weight when you go back into calorie deficit.

'The important point is to maintain sufficient high-quality nutrition to support your training,' Kelly adds.

'High-protein meals should help you feel full for longer and ward off hunger,' says sports nutritionist Anita Bean. 'Protein reduces appetite and induces satiety more than carbs or fat, so is particularly useful if you're trying to shed pounds. It reduces levels of ghrelin, the hormone that makes us feel hungry, and increases levels of satiety hormones, which tell the brain you're full.'

'Carbs are important for fuelling your training, which leaves fat as the food group to target,' says Kelly. 'Look for it in hidden areas, such as full-fat milk, biscuits and crisps. It's really difficult to lose weight only by exercise – 500 calories from exercise is another 45mins-1hr on your bike per day.'

To sum up, coach Will Newton advises, 'I'd say in this case it's 90% diet, 10% training. You need to eat real food – not out of a tin, wrapper or microwaveable container.'



STAGE

14

SATURDAY 18 JULY

RODEZ
TO
MENDE



LOCAL HEROES
TOUR HOPEFUL ALEX GENIEZ IS FROM RODEZ



178.5
KILOMETRES

HILLY



POWER PLAYERS
Spain's Juan Antonio Flecha (below)
and Miguel Indurain (right) were
both known for their 'big engines'



HOW TO... BUILD POWER

Stage 14 isn't designated as a mountain stage but does have its fair share of lumpy bits, including the Côte de la Croix Neuve – 3km at an average gradient of nearly 10%. We'll look at hill training later (see page 27), but it's worth considering how to increase your power to help you go faster on the flat before the climbs.

'You need to be fit before you start,' says coach Tom Newman. 'It's like building a house – you need solid foundations in place. That means a good base level of aerobic and anaerobic fitness.'

'For me, the best way to do power sessions is on a turbo, because it's a controlled environment,' says coach Will Newton. 'You only need to do one power session a week, or maybe two, but don't overdo it.'

The key to building power is intervals. 'For example, do three sets of three minutes at slightly harder than your 10-mile time trial effort, with three minutes at recovery pace in between. It might not sound a lot,

but you don't need to do a lot to stimulate your nervous system.'

'It's the absolute root of any training,' says coach Ian Goodhew. 'You work a muscle, it breaks down a little during exercise, it goes, "Whoa, I didn't like that," and repairs itself stronger during rest so it's better able

to cope with the same level of effort next time.'

'When your body feels under threat, your nervous system shuts down, so you want a stimulus that lets you do more of it,' Newton adds. 'If you overload your body, it will break down, rather than get fitter.'

The key is to ask yourself what your goals are. 'If you're

entering a time trial, you need the power to sustain the same pace for a fixed period,' says Newton. 'If it's a criterium race, you need a significantly higher power output that's repeatable. That's because you might do 20 pedal strokes hard, then cruise around a corner and repeat. You need to replicate that in training.'

**'YOU ONLY
NEED TO DO
ONE POWER
SESSION PER
WEEK – DON'T
OVERDO IT'**





STAGE

15

SUNDAY 19 JULY

MENDE
TO
VALENCE



SOUTHERN BELLE
VALENCE IS KNOWN AS THE GATEWAY TO THE SOUTH



183
KILOMETRES

SPRINT



HOW TO... BREAK AWAY FROM THE PACK

Stage 15 takes the Tour into the Rhône-Alpes region, with a flat final few kilometres that should see the sprinters' lead-out trains working hard before a bunch finish in Valence. However, it's a stage that also provides opportunities for a successful breakaway for anyone feeling brave in the windy Rhône Valley – a key skill to have in your armoury if you're getting ready to race.

To get better at 'surging' when you launch an attack, and quickly put some distance between you and the pack, practise it in training. 'Sprint for 10 seconds, standing, and then ride for 1min 50secs as hard as possible,' says coach Will Newton. 'Then ride for three minutes at just below your threshold, time trial pace. Three minutes is probably longer than most people would do, but it gets you used to it. And focus on your breathing – you don't want to be doing deep breaths where everything slows down.'

When you come to put it into practice, timing is everything. 'In a race, you may find

that it's been hard, the pace has been high, and then suddenly everything settles. In a crit race [which usually lasts for an hour], that's probably around 25 minutes in,' says Newton. 'Everyone sets off hard, but by then the guys driving the pace have had enough. That's when you start to plan your move. Then, or when you've brought a break back in later in the race.

'Attack from a few riders back,' Newton adds. 'Less-experienced groups will give you more space, so come up the sheltered side of the bunch. Leave some space, fire onto the target's wheel and pull out as wide as possible – or as wide as is legal – because that makes it hard for anyone to get on your wheel, then slingshot past.'

Once you're past, assess the effect of your effort. 'And don't flog a dead horse,' says Newton. 'A 20m gap isn't enough, so don't keep thrashing yourself. I've seen it in races where someone will be giving it everything and the pack is laughing at them. Drop back to the bunch and try again later.'



ESCAPE TO VICTORY
Alexander Vinokourov looks back at the chasing pack on his way to winning stage 13 in 2010



STAGE

16

MONDAY 20 JULY

BOURG-DE-PÉAGE
TO
GAPROAD TO GLORY
A GOLDEN EAGLE MARKS THE ROUTE NAPOLÉON201
KILOMETRES

SPRINT



RIISING TO THE OCCASION
Jean Robic of France chases
Italian legend Fausto Coppi
on a climb in the 1952 Tour



HOW TO... TRAIN FOR HILLS

With the prospect of a fast, flat finish, the sprinters will be aiming to stick with the peloton over the relatively modest hills along the route of stage 16. And even if, like them, you're not a climbing specialist, it's worth training to improve your ability to deal with those bits of road that point upwards so you can remain in contention at the business end of a race.

Coach Tom Newman has a session you can try – hopefully without having to try too hard to find the requisite incline: 'Find a hill that's not too steep, that takes two or three minutes to ride in the saddle on the small ring, in the middle of the cassette, without too much of a problem.

'Then try it again at racing pace, staying seated in the saddle, and make a note of your time. Turn around, then next time ride out of the saddle, in a higher gear maybe, and note your time again. Then ride in a combination of both in and out of the saddle, and note your time. Aim to ride three to five of these

sessions in your ride. Once you're outside of 10% of your best time, pack it in.' The key is consistency. 'Add a hill climbing session once per week for a few weeks and see how much faster and efficient you get.'

Coach Will Newton recommends adding intervals to your hill climbs. 'Climbing

intervals aim to improve both seated and standing climbing,' he says. One session could be: a 75-minute ride with a 20-minute warm-up, in which you do two minutes' strong, seated climbing followed by a two-minute easy spin and repeat five times. Then do four sets of 15 seconds standing, 30 seconds seated climbs,

followed by a three-minute easy spin, and repeat this three times.

'They're long enough not to be a sprint, but not so long that the rider has to go into survival mode,' says Newton. 'There aren't a lot of them in each session, because they're there as a stimulus rather than a session to leave the rider exhausted.'

**'ADD CLIMBING
SESSIONS
ONCE A WEEK
AND SEE HOW
MUCH FASTER
YOU GET'**



STAGE 17

WEDNESDAY 22 JULY

DIGNE-LES-BAINS
TO
PRA LOUP



GOING UP
HILLS LOOM MENACINGLY OVER DIGNE-LES-BAINS



161
KILOMETRES

MOUNTAIN



HOW TO... DESCEND

The 17th stage ending at Pra Loup is reminiscent of stage 15 in 1975, when France's Bernard Thevenet beat Belgian great and five-time Tour winner Eddy Merckx. 'The descent of the Col d'Allos is very technical, very hard to tackle,' Thevenet said, which highlights one of the less-heralded skills in the peloton – a fast descent can save you huge chunks of time, and it's more about technique than fitness.

'The first thing you need to know is that you've got to be a bit mad,' says coach Ian Goodhew. 'Then it's about knowing your limits and those of your bike and the road – and the biggest problem is the road. Often you don't know it, so it's worth practising on local descents to build confidence. It can be baby steps but if you practise, you can start asking yourself: can I go faster? Can I use a bigger gear? Can I leave my hands off the brakes?'

'Relax,' says coach Will Newton. 'Don't let nerves get the better of you. And don't go

through 20 gears at once. If you're twitchy, you'll use up valuable energy.'

'Find a good descender and follow their line and technique,' says Goodhew. 'Joining a club can be a good idea. I learned from good people teaching me at club level.'

Enter a race. 'People who have raced will be more confident,' Goodhew says. 'In a sportive, you're often riding with people you don't know or trust. If people around you descend badly, so do you.'

'Look ahead,' Newton adds.

'That means you can think ahead. Look not where you are but where you want to be, 20 metres or so up the road. Then you can adjust your speed or your line before it's too late.'

Finally, trust your instincts, but toughen them up first. 'I see a lot of people clip out way before they reach a corner when they don't need to,' says Goodhew. 'People allow a pre-set mental state to make decisions for them. You need to overcome that, but again that all comes from practice.'

**'FIND A GOOD
DESCENDER
AND FOLLOW
THEIR
LINE AND
TECHNIQUE'**

DOWNHILL DEMON
Europcar's French showman
Thomas Voeckler is known
for his fearless descending



YELLOW FEVER

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STAGE

18

THURSDAY 23 JULY

GAP TO SAINT-JEAN-DE-MAURIENNE



FAITH AND GLORY

ANOTHER CHURCH AWAITS AT THE END OF THE STAGE



186.5
KILOMETRES

MOUNTAIN



YOU'RE PULLING MY LEG
FDJ's Mathieu Ladagnous receives attention at the end of another gruelling Tour stage



HOW TO... RECOVER FROM A LONG RIDE

This year is the 200th anniversary of the '100 days of Napoléon' and the route for stage 18 takes in part of the Route Napoléon, the road the Emperor took to march on Paris. History lesson over, the riders face a gruelling stage that takes in the fearsome Col du Glandon.

But whether you're a marching army, a member of the peloton or an amateur, recovery is as vital to your performance as the training you do in the build-up.

'Post-ride, carbs and proteins are essential to rebuild muscle and help recovery,' says coach Ric Stern. 'You can have something as simple as chocolate milk immediately after, while pasta or beans on toast with eggs will provide carbs, proteins and fats.'

You also need to help your muscles recover and there are two ways of doing this: stretching and massage.

'Post-exercise stretching certainly helps, especially when the muscles are still

warm,' says sports therapist Ian Holmes, a soigneur for Madison Genesis. 'For every muscle that contracts, another expands – for example quads and hamstrings – and tiny sections of muscle remain contracted. Stretching helps iron these out, so I'd recommend that straight after exercise and

a massage an hour or so later.'

Massage aids recovery, helps maintain conditioning and assists in the treatment and rehabilitation of injuries. It works by flushing the waste substances that are a by-product of exercise – including lactic acid and carbon dioxide – out of the muscles.

'The pros have a massage within an hour of getting off the bike but for the rest of us, it's a very individual thing,' says Holmes. 'You need to see what works for you, but I wouldn't recommend a massage the day before a big event. Often cyclists have it on a Monday, after a big ride or race on Sunday. They might be a bit sore on Tuesday, but will be OK by Wednesday.'

**'POST-RIDE
CARBS AND
PROTEIN ARE
ESSENTIAL
TO REBUILD
MUSCLE'**

HOW TO... SHED WEIGHT FROM YOUR BIKE

Weight matters when you're climbing on a bike, especially on a brutal alpine stage that takes in the Col du Chaussy, the Col de la Croix de Fer and the Col du Mollard, before the final ascent to La Toussuire-Les Sybelles. We've already looked at how you can shed weight from your own frame (see page 22), but your bike needs to be light too if you're planning on doing any serious climbing yourself.

'The first question you need to ask when you're considering upgrading your bike is: to what end?' says coach Ian Goodhew. 'You don't have to spend shedloads of money. Shimano's 105 11-speed groupset is bloody brilliant, but many people think the minimum they need is Dura-Ace or Ultegra, which whacks the price up. If you're a weekend racer you have to ask, what's the advantage? You know what? 105 is probably good enough.' With that in mind, you should consider allocating more of your budget on reducing weight elsewhere.

'If you don't already ride a carbon frame, making the upgrade is likely to be the single biggest weight-saver,' says coach Paul Butler. Components such as saddle, seatpost and handlebars are another area where you can trim excess grams – but don't compromise on comfort. And then there are the wheels.

'Deep section wheels are all the rage right now but in many cases they're actually heavier than a cheaper pair of alloy wheels that aren't deep section,' says Butler. 'In theory, if you're trying to save weight you'd choose tubular tyres as they're normally lighter than their clincher equivalent, but much more problematic if you puncture on a ride. So, according to your budget, compare the weight of various wheelsets – but find out how much your current wheelset weighs first. If money is no object, look for the brand Lightweight as they'll almost certainly be lighter than your current wheels. Then pick yourself up off the floor when you've seen the price!'



ATTENTION TO DETAIL
At the speeds he sprints, Cav needs to make sure his bike is absolutely perfect before a race



STAGE

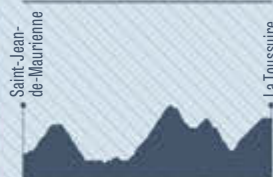
19

FRIDAY 24 JULY

SAINT-JEAN-DE-MAURIENNE TO LA TOUSSUIRE



TREES COMPANY
ROLLING TOWARDS LA TOUSSUIRE IN 2012



138
KILOMETRES

MOUNTAIN





STAGE

20

SATURDAY 25 JULY

MODANE
VALFRÉJUS TO
ALPE D'HUEZ



NOTRE-DAME-DE-CHARMAIX

SAY YOUR PRAYERS BEFORE THREE HUGE CLIMBS



110.5
KILOMETRES

MOUNTAIN



ORANGE ORDER
Dutch fans create a party
atmosphere on the slopes of
the infamous Alpe d'Huez



HOW TO... TOUGHEN UP

Alpe d'Huez is one of the most iconic and challenging climbs in Tour de France history. Appearing in this year's Tour just 24 hours from the finish, it could still influence who wears the yellow jersey in Paris and will demand one excruciating final push from the riders. Which makes this an ideal time to look at how you can toughen up mentally for your own race preparations.

'A lot of the mental toughness you need comes from training,' says coach Ian Goodhew. 'If you've spent three months building up for an event in dry weather and it rains on the day, what are you going to do? You need the mental strength to go out in the rain before the big day.'

Coach Will Newton agrees. 'If you live close to the course, practise riding it – or at least replicate the toughest sections near your home. But if you've done a good volume of training, including plenty of climbing, you should be OK. You just need to make sure you're in the right frame of mind.'

'Physical preparation affects your mental performance,' says Goodhew. 'Know your

bike inside out – how to change a tyre, how the gears work, how to change the cassette. If you're confident your bike is in good working order, you'll be ready. Practise, practise, practise.'

'Make a plan and stick to it,' Newton adds. 'And plan for the "what if". My favourite saying about this is, "Everyone has a plan until they get punched in the mouth." Be prepared to be punched in the mouth, figuratively speaking. What if you get a puncture, take a knock or can't get up that hill and have to get off the bike? Be prepared for all these eventualities and nothing will surprise you.'

'You must get your body used to spending long hours in the saddle before the event,' says Goodhew. 'Your body can run on its stores of glycogen for about two hours, and after that it starts to break down fat and other carbohydrates squirreled away in the body. You'll have a lull, and it scares a lot of people who aren't used to it. If you regularly ride for three hours or more you'll be prepared for it – because it will happen to everyone at some point.'

HOW TO... MAKE THE MOST OF THE OFF-SEASON

The hard work is done. There is one last procession into Paris and a final sprint up the Champs-Élysées before the victor is crowned – and although their season won't end there, the winners and losers will already be starting to plan for 2016. Which is something you too should consider when the main event in your season is done.

You might feel like a break, but that doesn't have to mean mothballing your wheels. 'Take out the stuff you don't like doing but don't stop riding your bike,' suggests coach Will Newton. 'It's important not to stop altogether because your body can begin losing fitness adaptation within two weeks.'

'Use your fitness for something else,' he adds. 'Go on a cycle tour, or try mountain biking – which is great for improving your technique – but no sprinting or

burying yourself. It's a good time to simply rediscover the joy of riding a bike.'

Winter is a good time to work on your strength in the gym. 'Do it two to three times a week at times when you're riding less,'

says coach Paul Butler.

'Do high reps with big mobility, not low reps with heavy weights and small movements,' adds coach Ian Goodhew.

'You're not trying to build muscle. You need a sensible regime of, say, three sets of 10-15 reps with reasonable, not big, weights. And focus on your technique.'

Talking of mobility, the off season is a good time to work on this. 'Cycling is horrible for posture,' says Newton. 'Yoga or pilates can help stretch out those muscles, and help you to learn to move again.'

Oh, and finally, if you're anything like us, don't forget to polish those trophies.

**'THE OFF
SEASON IS A
GOOD TIME TO
REDISCOVER
THE JOY OF
RIDING A BIKE'**

JERSEY CREAM

Thibaut Pinot, Vincenzo Nibali, Peter Sagan and Rafal Majka celebrate the end of the 2014 Tour



STAGE

21

SUNDAY 26 JULY

PARIS
SÈVRES TO
CHAMPS-ÉLYSÉES



GRAND FINALE

THE ARC DE TRIOMPHE AWAITS THE TOUR WINNER

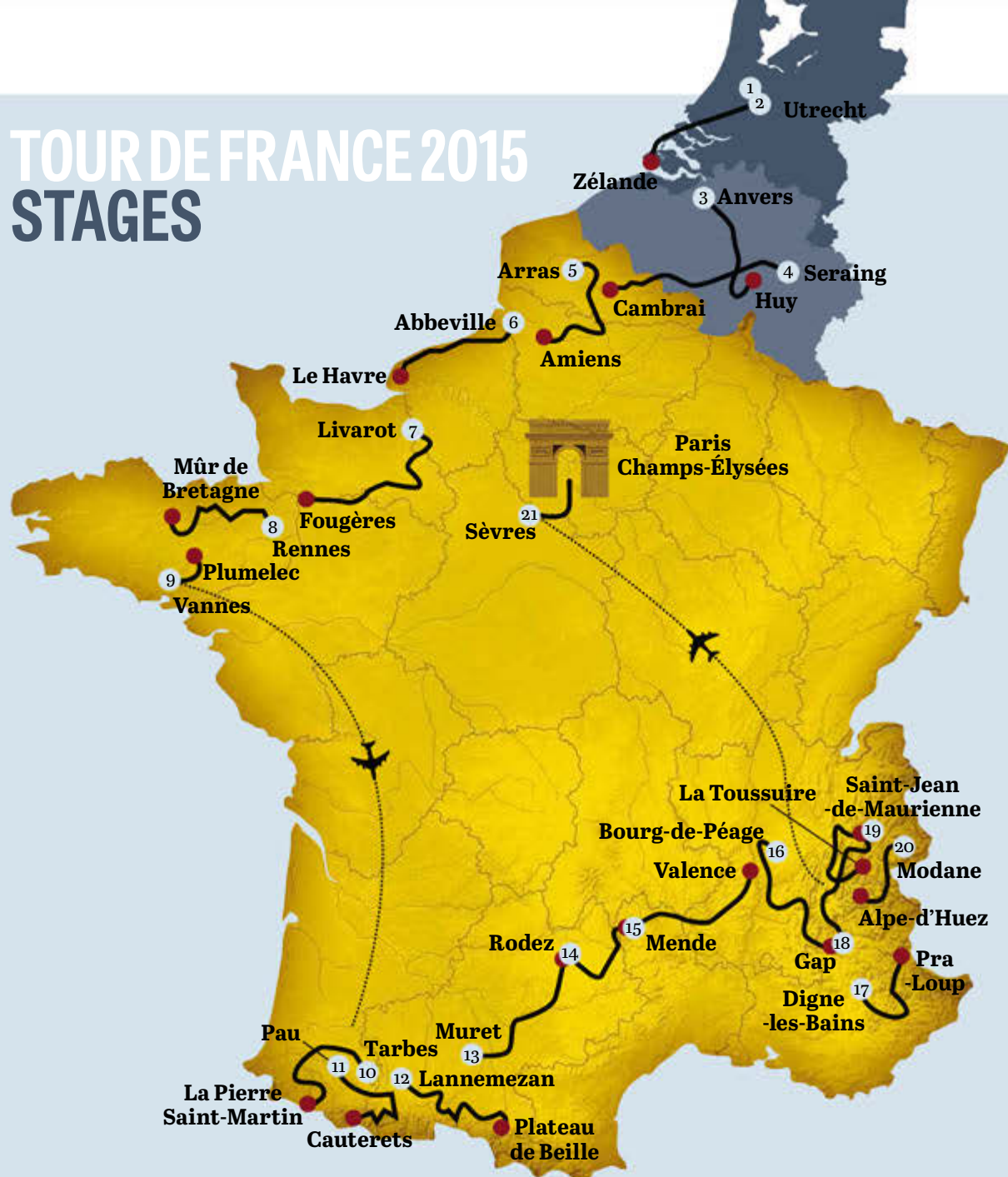


109.5
KILOMETRES

SPRINT



TOUR DE FRANCE 2015 STAGES



STAGE 1

13.8 KM - UTRECHT

STAGE 2

166 KM - UTRECHT TO ZEELAND

STAGE 3

159.5 KM - ANVERS TO HUY

STAGE 4

221.5 KM - SERAING TO CAMBRAI

STAGE 5

189.5 KM - ARRAS TO AMIENS

STAGE 6

191.5 KM - ABBEVILLE
TO LE HAVRE

STAGE 7

190.5 KM - LIVAROT TO FOUGÈRES

STAGE 8

181.5 KM - RENNES
TO MÛR-DE-BRETAGNE

STAGE 9

28 KM - VANNES TO
PLUMELEC

REST DAY

STAGE 10

167 KM - TARBES TO
LA PIERRE-SAINT-MARTIN

STAGE 11

188 KM - PAU TO CAUTERETS

STAGE 12

195 KM - LANNEMEZAN TO
PLATEAU DE BEILLE

STAGE 13

198.5 KM - MURET TO RODEZ

STAGE 14

178.5 KM - RODEZ TO MENDE

STAGE 15

183 KM - MENDE TO VALENCE

STAGE 16

201 KM - BOURG-DE-PÉAGE TO GAP

REST DAY

STAGE 17

161 KM - DIGNE-LES-BAINS
TO PRA LOUP

STAGE 18

186.5 KM - GAP TO
SAINT-JEAN-DE-MAURIENNE

STAGE 19

138 KM - SAINT-JEAN-DE-
MAURIENNE TO LA TOUSSUIRE

STAGE 20

110.5 KM - MODANE TO
ALPE D'HUEZ

STAGE 21

109.5 KM - PARIS: SÈVRES
TO CHAMPS-ÉLYSÉES

BikesEtc

TOUR DE FRANCE GUIDE 2015

EDITOR

MICHAEL DONLEVY

ART DIRECTOR

ANDREW SUMNER

DESIGNER

JOHN CATHERALL

PRODUCTION EDITOR

DAVID KENNING

PHOTOGRAPHY

ALAMY, GETTY,
GEOFF WAUGH





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TOUR DE FRANCE

SPECIAL

4-26 JULY

2015

21 STAGES

TOTAL DISTANCE
3,360
KM

221 KM
LONGEST STAGE

MOUNTAIN
TOP
FINISHES

5

13

KM OF COBBLES

22



TEAMS

198 RIDERS

€450,000



PRIZE